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DISTEMPER IN THE FOX

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Foxes bred and reared in captivity suffer from diseases epidemic in character and commonly referred to as " distemper." Green (1925 and 1926) described " distemper " in the silver fox. From his researches he concluded that two types of " distemper " could be recognised, one due to an organism of the Salmonella group and the other caused by a filterable virus, the presence of which could be demonstrated in the blood, nasal discharge, etc.

We undertook an investigation to ascertain if foxes are susceptible to infection with the canine distemper virus and if so to establish whether they can be successfully immunised. Eight silver fox cubs were obtained from a Scottish fox farm (through the influence of Mr. G. Dykes, M.R.C.V.S., Glasgow, to whom my thanks are due). Six were treated in various ways with distemper vaccine, serum, etc., and two were kept unprotected as controls. Unfortunately, one of the six died from an intercurrent disease during its period of treatment: thus, five foxes were "immunised" with various distemper products. To test whether these five were immune, they and two, untreated in any way, were injected some weeks later with active canine distemper virus in the form of an emulsion of infected ferret spleen. The five previously treated foxes showed no ill-effects, while one of the two control foxes died 11 days after receiving the virus injection, *i.e.*, on December 1st, 1931. The second control fox refused food on the tenth day but otherwise behaved normally. Attempts to record temperature reactions were made but were discontinued because of the great variation in the temperatures of normal foxes, due doubtless in some measure to the excitement displayed during handling. On December 3rd, 1931, an emulsion of the spleen of the dead fox was injected into a ferret which developed typical distemper on the tenth day and was killed when showing severe symptoms four days later. The spleen also fixed about 15 doses of complement in the presence of immune serum.

The experiment suggests that the fox is susceptible to infection with canine distemper virus and that successful immunisation can be carried out.

The foxes were returned to their owner and we have heard from Mr. Dykes, who has examined them on several occasions that, after recovery from the immediate effects of the journey to Scotland, they have remained fit and well.

A further series of experiments on similar lines is contemplated.

References

Green, R. G. *Proc. Soc. Exp. Biol. & Med.* xxii (1925). pp. 546-548.

Green, R. G. *ibid.* xxiii (1926). pp. 677-678.

A DISTEMPER-LIKE DISEASE OF THE FOX

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In 1921 Allen[1] investigated an outbreak of disease, affecting foxes on Prince Edward Island, which he regarded as canine distemper. During the past two years I have had the opportunity to study a similar outbreak of disease amongst foxes in approximately the same locality as the epizootic investigated by Allen. It was demonstrated by Allen that the disease investigated by him was caused by a filterable virus. Wickware (1931), of the Department of Agriculture, has shown that the present disease affecting foxes here is also caused by a filterable virus, and is communicable to the ferret. Law[3] (1931) at the Experimental Fox Ranch, Kirkfield, Ontario, has investigated a disease occurring amongst foxes in Ontario, which he regards as dog distemper. However, it is not clear whether Law is referring to the disease occurring naturally among foxes, or to dog distemper in some foxes which he had sent to a dog hospital to contract the disease.

Unfortunately, no work has been undertaken to show definitely whether the disease as it occurs here is actually canine distemper or not, but there is considerable evidence to suggest that the epizootic, though somewhat similar, is quite distinct from dog distemper. The disease has affected foxes here for the past two years, and while it is extremely contagious for the fox, there has been no tendency for it to spread amongst the dog population of the affected area. A few dogs in affected ranches have contracted the disease and died, while a great many others remained healthy which were sufficiently exposed to infection to have contracted the disease had it been dog distemper. In a district of an adjoining province, canine distemper has been prevalent for the past year but there have been no reports of the disease having spread to fox ranches in the area.

DEPT. OF VET. MEDICINE

Anti-canine distemper serum, according to the work of Wickware, is of no value, either as a prophylactic or treatment for the disease as it occurs in foxes here. In the few cases where I have given the serum a trial no beneficial results whatever were obtained.

During the past summer, I was extremely fortunate in having an outbreak of canine distemper in foxes and fitch, come under my observation. The disease was introduced into the ranch by imported fitch, which were housed in the ranch cook-house, and it was not until a good many had died that a few carcasses were forwarded to me for examination and a diagnosis of distemper made. The seriousness of having animals with distemper housed in the cook-house where the feed for over 600 foxes was prepared, was at once realised, and the fitch were immediately removed to a place of safety. It was not long before the disease made its appearance among the foxes, but unlike the epizootic in Summerside, it remained more or less localised in certain sections of the ranch. By the liberal use of anti-canine distemper serum (Lederle) given at ten-day intervals, the disease was kept completely under control, and after about three months cleared up without serious losses, the total deaths from distemper being about 1 per cent. of the foxes in the ranch. The serum was also given to all the fitch at ten-day intervals. Its curative value, however, in this class of animal was not as marked as in the fox and nearly all the fitch showing severe symptoms eventually died. On the other hand, very few fitch receiving the serum as a prophylactic developed any symptoms of the disease.

Autopsy.—On autopsy the lesions found show a very marked variation and in many acute cases no lesions whatever can be found to indicate the cause of death. The spleen, in the early stages of the disease, is usually slightly enlarged and may present a more or less characteristic mottled appearance, which is probably the most constant lesion found. When intestinal complications occur, the bowel may be inflamed from the stomach to the cæcum, and the mesenteric lymphatic glands swollen. The bowel contents may be fluid, greyish in colour, slightly blood-stained or consist of almost pure blood. In some foxes there is acute inflammation of the kidneys and the urine in the bladder may be tinged with blood or in some cases the organ may contain almost pure blood. There is usually a catarrhal condition of the respiratory tract, occasionally there is congestion and consolidation of the lungs.

Period of Incubation.—The period of incubation appears to be from three to four weeks. A few cases are on record where foxes developed the disease as long as five or six weeks after being removed from the source of infection.

Course.—On first gaining entrance to a ranch the progress of the disease may be extremely slow, or it may appear explosive in character, apparently depending on whether a few or many foxes contracted the disease in the first instance. Pups are most susceptible and nearly always contract the disease first. Usually a litter or two take sick and die; after a few days to three or four weeks a few more pups go down, and in this way it may be six weeks to well over two months before the disease has reached its height in a ranch. On the other hand, it would appear as though the first appearance of the disease had been entirely overlooked on some ranches, or that practically everything had become infected in the first instance. On one such ranch all the pups were dead within a week of the first appearance of symptoms.

The mortality from the disease has varied from 30 to 98 per cent. of foxes in the ranch. The average on untreated ranches is probably about 60 to 75 per cent. Pups are much less resistant than adult foxes and it is not an uncommon occurrence for a ranch to lose its entire pup crop from the disease while the loss of adult foxes remains comparatively low.

Symptoms.—The disease is characterised by rapid emaciation, accompanied by great prostration and usually terminating in death. The first signs of the disease observed are loss of appetite, and a watery discharge from the eyes and nose, with frequent sneezing. As the disease progresses the discharge from the eyes may become more purulent and there is a collection of pus at the inner canthus of the eye, or the eyes may become completely closed with the collection of dried pus. On some ranches the discharge from the eyes remains watery and the eyes have a peculiar glassy appearance throughout the course of the disease. Where a careful observation is made this glassy appearance of the eye can often be seen several days before any other symptom is observed. The discharge from the nose changes from watery to serous or blood-stained, and dries in the nasal passages and on the end of the nose, frequently blocking the nasal passages and causing the animal to breathe through the mouth. The tip of the nose, which was at first moist, soon becomes dry and hard and may become swollen to the extent that it presents a mushroom-like appearance. The pads of the feet may become swollen and cracked and the animal appear lame. Diarrhœa is a frequent symptom and may be present at any stage of the disease; on some ranches it is the first symptom observed; on others it may be entirely absent. The diarrhœa may be greyish in colour (later changing to yellowish), blood-stained, or consist of almost pure blood. On some ranches blood-stained urine is a very frequent symptom.

Nervous symptoms make their appearance

early in the disease and are characterised by a constant twitching of certain groups of muscles: it may be seen in a leg, the tail, the abdominal or thoracic muscles, the head or the eyes. This twitching occurs in quite a large percentage of affected animals and may continue long after recovery, in other respects, has taken place.

The disease may present all degrees of severity on the same ranch: foxes may be found dead without showing any previous symptoms, death may take place a few days after the onset of symptoms, or the animal may linger on for four or five weeks and eventually die. At the same time certain foxes will pass through an outbreak without showing any symptoms whatever.

Diagnosis.—It is very difficult to diagnose the disease by the examination of one or two carcasses unless some of the more characteristic lesions are present. The disease in the early stages may be confused with certain forms of food poisoning, but such cases respond promptly to appropriate treatment. When the swollen condition of the nose or the twitching of certain groups of muscles is present, these may be regarded as diagnostic of the disease. The watery glassy appearance of the eyes is almost always present in the early stages of the disease and is seldom seen to the same extent in other conditions of the fox. There is no other disease in which there is such rapid emaciation and extreme weakness.

Prevention and Treatment.—Where ranches are situated closely together the control of the disease by sanitary methods has completely failed. In areas of dense fox populations the tendency has been for the disease to spread from west to east, in the direction of the prevailing wind, and ranchers in its path have taken the most elaborate precautions to prevent infection of their foxes. All visitors were excluded, attendants not allowed to come in contact with other ranches, feed and water dishes disinfected daily and attendants made to walk through a pan of disinfectant on entering the ranch and before entering each individual pen, yet the disease gained entrance to these ranches and spread just as fast as in ranches where no precautions whatever were taken. Isolation or destruction of affected and contact animals and thorough disinfection of their quarters has repeatedly failed to check the spread of the disease once it has gained entrance to a ranch. The reason for this would appear to be the long period of incubation and the extreme infectiousness of the condition, in the very early stages of the disease, before any symptoms can be observed.

Early in the epizootic we soon realised that any form of medicinal treatment was worthless; vaccines prepared from organisms isolated from affected foxes were equally disappointing.

Taking into consideration the similarity of the disease to dog distemper and the fact that prolonged investigation had failed to implicate any organism as to the cause, it was decided to give vaccination by the method employed by Laidlaw and Dunkin,[2] in dog distemper, a trial, on the possible chance that it was caused by a filterable virus. A ranch where the disease had just started was selected for the experiment. A vaccine was prepared from the brain and spleen of affected foxes, following the method outlined by the above authors for the preparation of their attenuated virus. On December 11th, 1930, 35 foxes were given a dose of 5 c.c. each of the vaccine, and as there were no immediate ill-effects from its use, a further 175 foxes were given a similar vaccination two days later. Several days were occupied in the preparation of the vaccine and by the time it was ready for use the death-rate had mounted to seven or eight animals daily.

The disease up to the time of vaccination had been confined almost entirely to the pup sheds. Twenty-five of the most severe cases were destroyed for pelting, and any pups required for breeding purposes removed to open pens in the main ranch. This movement of foxes caused a rapid spread of the disease throughout the ranch and served much the same purpose as a second vaccination with supposedly live virus. In the three weeks following vaccination, many of the remaining foxes contracted the disease, but in a very mild form, most of them showing symptoms only for a few days, after which they recovered. Twenty-five of the 210 vaccinated foxes eventually died or were destroyed as unlikely to recover; however, a good many of these had shown symptoms of the disease at the time of vaccination. Five weeks after vaccination the disease had completely cleared up in the ranch, with the exception of a few foxes which still showed nervous symptoms.

These results were so encouraging that there was at once a demand by a great many ranchers in the affected area to have their foxes vaccinated with the same material. Altogether about 2,500 foxes were vaccinated by this method.

Most of the vaccinating was carried on during the latter part of December, 1930, and in January, 1931, and at times under adverse conditions on account of severe frost and heavy snowfalls, so that it was impossible to keep a close check on results.

The final result of the vaccination is as follows:—In 560 foxes in 17 ranches, there was no evidence of the disease at any time. In 740 foxes in 10 ranches which were affected at the time of vaccination the results could be classified as good. The losses after vaccination ranged from 2 per cent. to 20 per cent.

In 538 foxes in 11 ranches, which were

affected at the time of vaccination or developed the disease within two months after vaccination, no results could be claimed, as the losses ranged from 30 to 75 per cent.

Of the remaining 662 foxes in 18 ranches, no information is available for about one-third; in the remainder the disease appeared from two to five months after vaccination.

In August, 1931, the disease made its appearance in a small ranch of my own and I was given a further opportunity to observe the effect of vaccination. Symptoms were first seen in a litter of four pups on August 13th; on the 18th one was destroyed while moribund and a vaccine prepared from the brain, spleen and mesenteric lymphatic glands. The remaining three pups died on the 19th, 20th and 24th.

After standing at room temperature for 48 hours the vaccine was tested for gross contamination by examination of stained smears. A litter of five pups were given 4 c.c. each subcutaneously. On the following day a second litter of five pups and 13 adult foxes were given a dose of 5 c.c. each. Eight days later all animals were given a second vaccination. At the time of the first vaccination on the 21st, two adult foxes were found to be suffering from the disease; one died 14 days later and the other recovered after five weeks' illness. Three pups in one of the vaccinated litters and five adult foxes later developed slight symptoms of the disease, but continued to eat and made a rapid recovery. Six adult foxes and seven pups showed no symptoms whatever of the disease.

Having in mind the excellent results obtained with anti-canine distemper serum as a treatment for dog distemper in the fox, it was only reasonable to suppose that a similar serum could be produced for this disease in the fox. In discussing the matter with Dr. I. W. Jardine, he pointed out the curative value of serum from recovered cases of infantile paralysis and suggested that the same procedure be given a trial in the fox. He obtained a recovered fox and a serum was prepared from its blood and administered to four apparently hopeless cases. Two showed a prompt improvement after receiving the serum, but in the other two there was no response and they died a few days later. The two which responded to the serum made a complete recovery. The amount of serum obtained from one fox is small and ranchers place a premium on foxes which have passed through the disease, which made it practically impossible to obtain sufficient serum by this method to give it a further trial, on account of the cost.

Summary

A disease has been described, affecting foxes in the Province of Prince Edward Island, Canada. In certain districts it has assumed alarming epizootic proportions but has not spread to the dog population. Anti-canine distemper serum, which has marked prophylactic and curative properties in canine distemper in the dog, fox and fitch, is of no value in this disease. Therefore, it would appear that this is a previously undescribed disease of the fox and should not be confused with canine distemper.

The work up to this stage has been carried on entirely at my own expense, and much of the vaccinating done *gratis*. On account of lack of funds I have been reluctantly compelled to discontinue all further work on the disease. Fortunately the work has progressed sufficiently far to demonstrate two important points, which it is hoped will be of far-reaching value to the fox industry in the future––

(1) That foxes can be immunised against the disease, by vaccines prepared according to the method employed by Laidlaw and Dunkin, for dog distemper.

(2) That the serum prepared from recovered animals has curative properties, which suggests the possibility of preparing a hyper-immune serum for the disease similar to that prepared for canine distemper.

References.

[1]Allen, J. A. Theory and Practice of Fox Ranching.

[2]Laidlaw, P. P., and Dunkin, G. W. *Journal of Comparative Pathology and Therapeutics*, vol. xli, 1928.

[3]Law, R. E. *Rod and Gun and Canadian Silver Fox News.*

THE DIAGNOSIS OF TUBERCULOSIS AS SPECIFIED IN THE TUBERCULOSIS ORDER OF 1925*

H. L. Torrance, M.R.C.V.S., D.V.S.M.

The subject we have for discussion to-day is such a large one that it is quite impossible to go into it at all thoroughly in the time at our disposal. It is a subject, however, that must interest every veterinary surgeon as he is under a statutory obligation to report to the local authority any bovine animal suffering from tuberculosis as defined by the Tuberculosis Order, or which he suspects to be so suffering. The wide application of, and the general interest in, the subject will ensure a good discussion. I intend to be brief and I am not going to be didactic, because it is no use pretending that the diagnosis of tuberculosis by clinical and microscopical examination is not at times a very difficult matter and full of pitfalls for the unwary.

I do not think we will learn a great deal to-day by talking of our successes. We have plenty of them, but we must have our failures, and I am sure we will benefit far more by

* Paper presented in opening a discussion on this subject by the North Midland Division, N.V.M.A., at Sheffield, December 18th, 1931.

recounting the cases that humbled us and awakened our interest and enthusiasm when we made the *post-mortem* examination and found that our clinical knowledge was far from complete.

The types of tuberculosis specified in the Tuberculosis Order are:—

1.—Tuberculosis of the udder.
2.—Tuberculous emaciation.
3.—Chronic cough and definite clinical signs of tuberculosis.

1.—Tuberculosis of the Udder

Although uncomplicated tuberculosis affects the udder in various ways, there are certain characteristics common to all types, namely:—(1) absence of pain; (2) induration; (3) the skin is freely movable over the underlying tissue except where there is a tuberculous sinus; (4) if a hindquarter (and in some cases a forequarter) is affected, the corresponding supramammary lymph gland is enlarged; (5) the milk appears normal to the naked eye until the disease becomes very advanced.

According to the kind of induration present the condition may be divided into (A) Interstitial; (B) Nodular and (C) Indurated Area.

A.—*The interstitial form* is very typical and when once seen is easy to recognise again; it can be diagnosed with certainty on the clinical examination alone. The affected quarter, or quarters, are greatly enlarged and are very hard when palpated.

B.—*The nodular variety* is not a very common type and may be mistaken for induration following an attack of non-tuberculous mastitis. The nodules vary in size from that of a pea or smaller up to that of a marble, and the larger ones feel as if they were all attached loosely together, so that they play over one another on palpation. In this type the quarter is usually atrophied, the milk secretion is scanty and often watery in appearance or like serum. When the quarter atrophies, it does so uniformly without the distortion which so frequently follows atrophy following non-tuberculous mastitis.

C.—*The indurated area type of lesion.*—In this type of lesion only a portion of one or more quarters is affected, usually a hindquarter in the upper posterior part, or just above the teat and anterior to it. The area may be well defined or the induration may tail off into the adjoining tissue. The milk appears normal to the naked eye, which is what one would expect, as only a part of the quarter is tuberculous.

The Characteristics in Common

I am not going to weary you by going through them seriatim, but I feel I must make a few brief observations on the supramammary lymphatic gland as an aid to diagnosis, and the changes produced in the milk.

The Supramammary Lymphatic Gland.—There cannot be tuberculosis of a hindquarter without enlargement of the corresponding lymphatic gland, and this is also true of many cases occurring in a forequarter. So that it is there to be palpated if it can be felt—an Irishism which should please your Secretary. Do not let us think for the moment of the type of cow producing milk in cities that is bought newly calved and when her lactation period is completed is sold fat for slaughter, but of the true dairy cow that has a calf about once a year, and is kept in what might be described as good store condition. The great majority of cows that develop tuberculosis of the udder have had three calves or more, by which time the udder is beginning to become more pendulous, and the supramammary lymphatic gland, in consequence, more easy to palpate. If the udder is tuberculous one can nearly always feel the enlarged lymphatic gland on the same side as the diseased quarter, but to ascertain whether it is enlarged it is not necessary to feel the whole gland, because if the gland is enlarged the lower posterior border will share in the general enlargement, and where that alone can be felt we can say whether or not the gland is enlarged. If the quarter is indurated, the lymphatic gland enlarged, and the milk normal in appearance, you are almost certainly dealing with a case of tuberculosis of the udder. Acute non-tuberculous mastitis with enlargement of the lymphatic gland is not likely to be mistaken for tuberculous mastitis, because there is the alteration in the milk, with in all probability some pain, as well as a history of mastitis. When the acute condition subsides, leaving an induration in the quarter, the lymphatic gland also decreases as there are no more toxins being formed in the quarter, whereas in tubercle the gland increases progressively with the disease. I am satisfied that the supramammary lymphatic gland is of great help in the diagnosis of udder tuberculosis.

The Changes in the Milk.—In the early stages of the disease the milk is unchanged in appearance, but as the disease progresses it becomes yellowish, due to the presence of serum. The milk secretion decreases progressively until the secretion is practically serum, plus inflammatory debris, which maybe a few blood cells.

Tuberculous milk occasionally contains blood when the disease in the udder has produced a slight hæmorrhage.

Microscopic Examination of Milk.—The conclusive evidence that an induration of the udder is tuberculous is the demonstration of tubercle bacilli in the milk. It is quite impossible with the time at our disposal to do more than merely mention the detection of tubercle bacilli in milk.

In 1922 I had the privilege of reading a paper before this Association in which I called attention to the importance of the grouping or clumping of certain cells in milk as a valuable aid to the detection of tubercle bacilli. Since then,

I have had ample opportunity of testing the value of this method and I am absolutely satisfied that it is the secret of success in the detection of tubercle bacilli in milk from a diseased or suspected quarter.

2.—Tuberculous Emaciation

This category is for cattle suffering from emaciation as a result of tuberculosis that cannot be included in either of the other two categories, and presents the greatest possible difficulty to the clinician. Fortunately, as a general rule, although the cow is emaciated and suffering from tuberculosis, one has sufficient evidence to deal with it either as pulmonary or udder tuberculosis. The types of disease that are likely to bring an animal within this section are—tuberculosis affecting the pericardium, the peritoneum and the mucous membrane of the intestine.

(*a*) *Tuberculous Pericarditis.*—In tuberculous pericarditis the heart beats are muffled, sometimes irregular and one often gets definite friction sounds.

(*b*) *Tuberculous Peritonitis.*—This condition I simply cannot diagnose.

(*c*) *Tuberculous Enteritis.*—I have only met with one case. The cow had diarrhœa and I was able to demonstrate the tubercle bacilli microscopically in the fæces.

I must point out that it is sometimes possible to palpate the enlarged and calcareous mesenteric glands through the abdominal wall. You can hardly believe that—neither could I until one day a farmer asked me to say whether a tuberculous cow, which was being dealt with under the Order, was in calf. I palpated the flank and declared the cow in calf. At the *post-mortem* examination I found the " calf " to be a very large calcareous mesenteric lymphatic gland!

The most typical case of tuberculous emaciation I have seen turned out, on *post-mortem* examination, to be leukæmia. I know if I had done a blood count I would not have made that mistake, but it is so easy to be wise afterwards.

3.—Chronic Cough and Definite Clinical Signs of Tuberculosis

The types of disease included in this section are (1) pulmonary tuberculosis; (2) tuberculous pleurisy and (3) in some cases tuberculous pericarditis when it is accompanied by a cough.

There is only one particular kind of cough that I associate with tuberculosis and I have heard it in very acute cases. It is a short, painful, frequent, almost soundless, cough, as if the cow were afraid to cough on account of the pain felt in doing so. The character of all other coughs, so far as I am concerned, does not help me in the diagnosis of pulmonary tuberculosis.

Auscultation, in spite of its many drawbacks in cattle, is of great service in the diagnosis of pulmonary tuberculosis.

I have obtained the most satisfactory results by using the phonendoscope for this purpose. In Nottinghamshire 62 per cent. of the cattle that I have dealt with under this category have been diagnosed on a clinical examination alone, while in 38 per cent. the clinical examination was confirmed by the demonstration of tubercle bacilli in the sputum.

Râles.—In some cases of tuberculosis of the lungs and pleura a great variety of râles can be heard—crepitation, whistling, wheezing, crackling, squeaking and friction sounds of different kinds, depending on the amount of lung tissue affected, whether it is superficial or deep, and the stage of the disease. Cases of this kind can be diagnosed with certainty and are only likely to be confused with emphysema and broncho- or lobular pneumonia.

Emphysema.—In emphysema the entire lungs are affected and the râles heard are whistling, blowing and wheezing. These sounds can be heard over any part of the chest that can be auscultated, whereas in tuberculosis the sounds can best be heard in certain areas of the affected ones and one frequently gets friction sounds that are absent in emphysema. In differentiating between the two conditions I attach the greatest importance to areas giving rise to friction sounds of different kinds or râles other than whistling, blowing and wheezing, that synchronise with the breathing and are constant as indicating tuberculosis.

Lobular Pneumonia.—The difficulties in the early stages are not great as there is the suddenness and seriousness of the condition, but sometimes during the convalescence, and particularly where there is no history, the differential diagnosis is not so easy. In this case the râles heard are mostly of a whistling and deep musical note.

I regret having taken up so much of your time, but I plead the magnitude of the subject and trust that I have not wearied you too much.

Mr. W. Tweed (Hon. Secretary): I should like to say how pleased I felt when Mr. Torrance consented to come to-day to give us his views on the Diagnosis of Tuberculosis in Bovines.

Many discussions have taken place on the diagnosis of tuberculosis under the Order and much information has been obtained during the past few years by members of the profession operating the Tuberculosis Order. The microscopic examination of milk samples has been made more reliable, and one can confidently eliminate infection from the milk supply quickly on this test alone. First Torrance, then Matthews and myself reported in the Veterinary Press our faith in the presence of cell groups in milk samples as an aid in the microscopic examination, and although some samples still give one considerable difficulty in demonstrating tubercle bacilli, the presence or absence of these cells is the means of assisting one in deciding what further steps are to be taken in the examination of the sample.

By the laboratory examination of samples one can confidently deal with a cow amenable to

the Order when tubercle bacilli have been demonstrated in the sample. A method which can be adopted for the collection of sputum is to attach a wire shield arrangement, over the end of which is attached a clean cloth, to the nose-band of a halter and this is put in front of the cow's nose and the animal turned out for a walk in the hope that coughing will result. In many cases a sample may be found in this way if it cannot be found on the wall in front of the cow's stall. It has also been recommended to collect sputum from the back of the hard palate, but I have never tried this. A question arises here in the collection of sputum from a cow with a chronic cough, as to whether she may be showing clinical signs of tuberculosis. I have personally collected a positive sputum from a cow with chronic cough which was in good condition and which I should not have dealt with under the Order on clinical examination only, and I should like to ask Mr. Torrance his opinion as to whether such cases should or should not be dealt with under the existing terms of the Order. Personally, I think they should be dealt with, as sputum-positive cases usually show active tuberculosis on *post-mortem*.

In the examination of urine I have been successful on several occasions in finding tubercle bacilli when I have been unable to get a sputum sample, but one leaves the examination of urine as a last resort, although one notes in meat inspection the high percentage of cows' kidneys affected with tuberculosis in cases where the carcass is extensively affected on the peritoneal membranes.

In the clinical diagnosis of tuberculosis of the lung I have never yet heard two veterinarians describe sounds in the lungs in a similar way. We are, unfortunately, handicapped in the use of the stethoscope but, on the other hand, we get the best opportunities possible in the class of cases for examination.

Where a cow is showing dull eyes, extended nose, is coughing and perhaps salivating, with elbows turned out and prominent ribs due to wasting of the intercostal muscles, and giving all the abnormal sounds possible in the lungs, the diagnosis is easy; but to make observations on the clinical examination of lungs in less advanced cases is, for want of a better description, very much like the exercise of a second sense peculiar to the individual examiner and can only be described by him as he interprets them. A routine method of auscultation should be followed, for example, by listening to the inspiratory sounds only on one side and comparing them with those of the other lung and then the same with the expiratory sounds. In this way an area may be found where the respirations are interrupted and jerky, due to obstruction of air in the alveoli, and these are very significant of tuberculosis. An area where bronchial breathing is heard due to consolidation of the lung tissue is useful, but bronchial breathing, to be of diagnostic significance in tuberculosis, must be strictly localised over a limited area, especially in the upper part of the lungs and accompanied by dulness over the same spot.

Crepitation sounds heard on inspiration (like rubbing your hair between your fingers) if accompanied by moist sounds, are thought to be tearing apart of sticky surfaces and are usually provoked by coughing, but the larger the area over which these are heard, the less the likelihood of their being of tuberculous origin.

Whistling or snoring sounds localised over one of the lobes of the lungs, whether accompanied by crackles or not, I find diagnostic sounds of old-standing tuberculous lesions.

Having made these remarks on auscultation, however, the differentiation between the various conditions which can be met with in lungs is still a further matter which requires prolonged individual study and it is by a process of including the history of illness and constitutional symptoms that a diagnosis can be arrived at.

The tuberculin test has its value in cases where a negative reaction is obtained, and there are undoubtedly a few cases where it has to be relied upon, but I should like to conclude by saying that we cannot carry out enough laboratory examination in the diagnosis of tuberculosis.

Captain E. G. Johnson asked whether it was a wise thing to say without test whether or not tuberculosis was present.

Mr. A. Walker thanked Mr. Torrance and said he was pleased at his temerity in mentioning the enlargement of the supramammary lymphatic gland; Mr. Marrison would bear him out that in the examination of a herd which they had already examined twice without finding the affected cow, they discovered one with enlargement of the supramammary gland which was found to be giving tuberculous milk and he was therefore inclined to put more faith in this gland as a guide. In this case there was no apparent lesion in the udder substance. He had some difficulty in diagnosing tuberculosis of the lungs and would like Mr. Torrance to enlarge upon the synchronised sounds. He had one case where there was no expectorate and the lungs appeared to have only tubular sounds, the expiratory one being entirely absent, and on *post-mortem* the lungs were as if fully inflated and were full of tubercle, all the elasticity of the lungs having gone. As to sputum on walls, he had found that the greater the amount the less likelihood there was of it being positive.

Mr. W. T. MacGregor expressed disappointment that Mr. Torrance did not say more about tuberculous emaciation. During the time he had been in the West Riding he had found quite a few cases. The "tuberculous eye" had been of great assistance to him in diagnosis: in the advanced stages the eye was much enlarged, the white bloodshot, and a discharge of pus might be present. Only in one case had he found both eyes affected. Another point was the nervous system, fits and also lack of co-ordination of the hind legs. He was sorry Mr. Torrance did not say more about the enlarged supramammary gland in cases of tuberculosis of the udder; did he mean that there was no induration of the udder? He did not agree that the glands were always enlarged: he had only had one case in which he had found tuberculosis present in no other place but the udder and the supramammary gland was not in any way affected.

He regretted that Mr. Torrance did not deal at greater length with the examination of milk and would like to say how helpful he found the cell groups as a guide in microscopic work; this having led to a considerable increase in his percentage of positive results. He had found the examination of sputum more difficult than that of milk and that a cow suffering from tuberculosis of the lungs could throw up negative sputum at times. He did think there was a definite tuberculous cough, but did not rely much on this but rather on a general clinical picture of the cow, position of forelegs, head, respirations, etc. He also thought more microscopic work would lead to better results.

He asked if there were cases where the tuberculin test was necessary.

Mr. G. Tullis voiced his agreement with all that Mr. Torrance had said, but observed that he considered the tuberculin test was of very limited value in the administration of the Order,

as from 60 to 80 per cent. of the cows would react. He had noticed the peculiar eye, but had not associated it with the diagnosis of tuberculosis.

Mr. D. D. Canning said that, in regard to the palpation of the supramammary gland, he had not always been able to do this and he would like to know how to differentiate between tuberculous pericarditis and traumatism.

Mr. T. C. Fletcher, having thanked Mr. Torrance for his remarks, added that he could see no use in using the supramammary gland as a guide in diagnosis. He would not like to take an emaciated cow under the Order unless she had some other clinical signs of tuberculosis, but what definite clinical signs were to be looked for if the cough was not tuberculous? In his opinion auscultation of the chest was a pitfall into which one might easily fall. He had never looked for disintegration of the eye and would not take it as diagnostic unless there were other symptoms to go by. He did not agree that there could be absence of pain in tuberculosis of the udder. He was sure the discussion had been a revelation and would make them more careful in the diagnosis of tuberculosis.

Mr. J. M. McKellar thanked the members for the welcome extended to the visitors. The most difficult cases he had had to deal with had been those of miliary tuberculosis. He had found much help in diagnosis by palpation of the supramammary gland and agreed with Mr. Walker that in some cases there had been no tuberculosis of the udder.

Mr. W. Collinson thought emaciated cows could easily be dealt with, but reactors which were in good condition were being turned out of certified herds and sold all over the country, and he considered these should not be passed on to anyone else and become a danger elsewhere.

Mr. Fletcher commented that he considered tuberculous bulls a much greater menace.

Mr. E. Marrison said he had been drawn into the discussion by Mr. Walker's mention of the supramammary gland. In the case referred to a sample had been taken from the animal, in which this gland was palpable, and this had been found positive. He had found the tuberculous eye diagnostic and in most cases had found tuberculous meningitis. His chief difficulty had been with tuberculous emaciation, which might be Johne's disease and it was almost impossible to diagnose the difference. He thought the tuberculin test should be struck out of the Order, as in cases of Johne's, with tuberculosis superimposed, the test did not act. He did not find much difficulty with cases of cough and clinical signs of tuberculosis, because most of those cases were so far advanced that there was little doubt about them, and the only difficult cases he had met with had been those of pneumonia.

Mr. R. Hudson (President) observed that one often got slack skin of the udder in cases of mastitis. Too much importance should not be attached to the supramammary gland, as Mr. Torrance had only indicated this as a guide. He had only met with tuberculous enteritis once and had sent the specimen away for diagnosis. There might be something in auscultation if local râles were present. On one or two occasions he had found solid lungs and thought this must be due to some pathological cause which should be investigated. He had often found that a cow might run a very high temperature after calving and continue to have it, whereas in the case of pneumonia the animal went off its feed.

In replying to points raised in the discussion, Mr. Torrance said that Mr. Tweed had asked whether a bovine passing tubercle bacilli in the sputum came within the scope of the Order. In his opinion it did not, unless it also suffered from a chronic cough and definite clinical signs of tuberculosis, or suffered from tuberculous emaciation. He agreed with Mr. Tweed that whistling or snoring sounds must indicate pulmonary tubercle, but he did not consider them diagnostic. His opinion was that friction sounds or râles, other than whistling or blowing, which synchronised with the respirations were much more reliable.

In reply to Mr. Walker, the supramammary lymphatic gland could become affected either from the udder or the abdominal lymphatic vessels, and where it became infected from the abdominal vessels it might be tuberculous for some time before any tubercle bacilli escaped from it by the lymphatic vessels into the udder, so that it was possible for the supramammary gland to be tuberculous although no tubercle bacilli were being passed in the milk. If this was admitted, and he (Mr. Torrance) thought it did happen, then it was easy to understand that in the very early stages, when the tubercle bacilli had passed from the gland into the udder, the enlarged tuberculous lymphatic gland could be palpated, although there had not been sufficient time for the development of any physical signs in the quarter.

In Mr. Walker's case of pulmonary tuberculosis, apparently the lungs contained so much tubercle that there was very little normal lung tissue left to function, with the result that the breathing must have been very shallow. Normally the expiratory sound was only one quarter of the inspiratory, and as the breathing became more shallow it would be still further reduced until it could hardly be heard at all. In such a case one would expect to hear râles only on inspiration, and, if present, they should occur regularly with each inspiration.

Mr. Torrance expressed great interest in Mr. MacGregor's reference to the "tuberculous eye," but said that he had never associated the type of eye described by Mr. MacGregor with tuberculosis. He would, however, bear it in mind, especially in relation to tuberculous emaciation. Mr. Torrance pointed out that in every case of clinical tuberculosis of the udder, the supramammary lymphatic gland was enlarged, and if it could be palpated it was a definite help in the diagnosis of udder tuberculosis. Mr. MacGregor had raised a big subject in asking whether in certain cases it was advisable to use tuberculin. Speaking generally, Mr. Torrance said that so far as the Order was concerned tuberculin should be used with the greatest caution, as a reaction gave no indication of the extent to which the reactor was affected with tuberculosis.

Mr. Canning's question as to how to differentiate between tuberculous and traumatic pericarditis could not be answered in a word, but briefly the history ought to be a big help, because before the foreign body reached the pericardium the animal usually suffered from traumatic indigestion. In traumatic pericarditis the animal was usually obviously ill, with a temperature, evidence of œdema, jugular pulse, etc., at certain stages of the disease. If gas escaped into, or was formed in, the pericardium, splashing sounds could generally be heard from the presence of gas and fluid. In tuberculous pericarditis all the above symptoms were absent. The heart beats were usually muffled and friction sounds could often be heard.

Mr. Torrance was greatly interested to hear that Mr. Marrison considered the "tuberculous eye" diagnostic.

NATIONAL VETERINARY MEDICAL ASSOCIATION

Golf Competition

VICTORIA VETERINARY BENEVOLENT FUND GOLF TROPHY

COMMITTEE.—Lieut.-Colonel P. J. Simpson, Maidenhead (Chairman), Major G. W. Dunkin (London), G. Howie, Esq. (Aberdeen), J. W. McIntosh, Esq. (London), Professor W. M. Mitchell (Edinburgh), Captain W. Shipley (Great Yarmouth), R. Simpson, Esq., F.R.C.V.S. (Whitehall Chambers, Lowther St., Carlisle), Hon. Secretary.

DRAFT RULES FOR COMPETITION

(1) Lieut.-Colonel P. J. Simpson has presented a trophy which is to be competed for annually.

(2) The competition is open to all members of the N.V.M.A., in Great Britain and Ireland.

(3) The trophy is to be held for one year only. In addition, a medal will be presented to the winner in each year by Dr. O. C. Bradley, and a Silver Spoon to the runner-up by Mr. R. Simpson, Carlisle.

(4) All entry money received in connection with the competition is to be devoted to the Victoria Veterinary Benevolent Fund.

(5) The competition is to be played in two stages.

First Stage.—Entrance Fee 5s. Entries to be handed in to the Secretary of the Member's Division. Arrangements for the first stage to be in the hands of the Secretary of the Division or his nominee in consultation, if necessary, with the Secretary of the Committee. The competition in the first stage is to be by match play. The handicap under which a member enters should be his lowest club handicap (limit handicap 18), and must not be altered at any time during the first stage of the competition. The first stage of the competition must be completed by June 1st in each year.

In the event of the winner of the first stage not being able to compete in the final stage, the runner-up or any single representative of the Division may compete in his stead in the final stage, in order that the Division may be represented. Divisions will be entitled to enter one competitor for every 25 or part of 25 of their membership. A competitor can only represent one Division.

Names of competitors qualifying for the final stage are to be forwarded by Secretaries of Divisions to the Secretary of the Committee by July 1st in each year, together with entrance fees received for the first stage.

Second or Final Stage.—Entrance Fee 5s. (optional sweep of 2s. 6d.). The winners of the first (or Division) stage, will play off under medal play condition (handicap), on a date coinciding with the Annual Congress of the Association, such date to be announced later. The handicap allowed for the final stage of the competition will be the lowest handicap of the competitor, as at the date of the opening of the Annual Congress.

The winner to be the player who returns the lowest score under handicap. In the event of a tie, the winner shall be the player who returns the lowest score under handicap to the last nine holes. Certificates of handicaps will be required when competitors are playing off the final stage.

Arrangements for the final stage will be in the hands of the Competition Committee.

The Veterinary Record
FEBRUARY 6TH, 1932.

WILLIAM HUNTING

THE members of the National Veterinary Medical Association, and indeed the veterinary profession as a whole, will rejoice to note from the front page of last week's *Veterinary Record* that at long last something has been done appropriately to perpetuate the memory of one who probably did more to make veterinary surgeons aspire to a higher status than any other man of his day.

There are perhaps few people who knew the real William Hunting, for behind a cheery and apparently careless exterior there lay a man of great purpose. As an exemplar of professional progress, he stands out very prominently in the founding of the *Veterinary Record*, a labour of love to him and to the late Mr. W. H. Brown, the printer, who was associated with him in its publication. His determination to carry out his design for advancement, despite the fact that the paper in its early days seldom cleared expenses, is but one example of his sterling worth and many qualities.

It may not be remembered now that the proposal for the purchase of the *Veterinary Record* by the National Veterinary Medical Association was met with much opposition at the time, but the Association has no reason to regret the step taken; indeed, it may with truth be remarked that it is indissolubly linked up with membership of the Association. But we think it a duty to state that when the negotiations were carried through and approval given at a General Meeting of the Association held in the Society of Arts Rooms, Adelphi, a very strong wish was expressed that the *Veterinary Record* should stand as a permanent memorial to the pioneer work of its founder. And it is in that spirit that a vignette photogravure of him has been added to the front page of our official organ in the earnest hope that he may be the more readily remembered and that it will be an inspiration to those who come after him to profit by the example which he so whole-heartedly and worthily set. One of his dicta we need never be weary of quoting, *viz.*, " Clinical observation makes a skilful practitioner, but his skill dies with him. By recording observations he adds to the knowledge of his profession and assists by his facts in building up a solid edifice of pathological science." (*Veterinary Record*, July, 1888). It is as true to-day as it was in the days of William Hunting that knowledge gained

by experience is a priceless asset to those who are engaged in the relief of human and animal suffering, and it is not only desirable but absolutely indispensable that such knowledge and experience should be recorded, so that scientific progress may result in the light conceived by William Hunting, and foreshadowed by his example.

THE JUBILEE CONGRESS

ALL British veterinary associations are, as it were, represented in the N.V.M.A., and the annual meeting is recognised as the grand re-union of the year, but that to be held at Folkestone in August will bear the additional dignity and interest of a jubilee event, and should evoke a correspondingly enhanced degree of enthusiastic support.

Our primary purpose in giving editorial notice to Congress while the year is yet young is to set an example of preparatory interest, for while arrangements for the gathering are already well in hand, it is a matter of some moment that those who are not Congress habitués should be made aware thus early of the exceptional importance of the 1932 meeting and should lose no time in making up their minds in the right direction. In this connection we would forewarn any indeterminate member that procrastination about this year's Congress is likely to prove the thief of those creature comforts associated with satisfactory accommodation that make or mar a holiday week, while we would remind everyone that there is a wide variation in availability of quarters between Folkestone in August and Norwich in September. There need be no fear of disappointment, however, if members will make application for rooms immediately upon receipt of the Folkestone Guide-book which, together with the Association's selected hotel and boarding-house list, will shortly be issued to each. This distribution is an innovation which, we are confident, will meet with universal approbation, and the possession of comprehensive literary and pictorial information concerning the delightful venue of this year's Congress is well calculated to enthuse a larger number than ever before, not only to attend themselves, but to take their ladies with them.

Twenty-four years have elapsed since the Association met on the South-East coast, and a venture into so charming and historically-fascinating a corner of England is not only justified by prospectively successful results, but is long overdue.

For the Folkestone meeting the South-Eastern Division will be accommodating Congress, and we are in a position to know that the Provisional Committee, which (exclusive of Council) is recruited from that area, is evolving a programme well worthy of the outstanding importance of the event. This preliminary portion of the Committee's labours is nearing completion, and the results will shortly be available for publication. We may take this opportunity, however, of referring without delay to a new recreative item which is destined to become a permanent feature of Congress week. In this issue we publish particulars of a golf competition, which represents the latest, and is certainly amongst the most promising, of the many efforts initiated by our President (Lieut.-Colonel P. J. Simpson) to strengthen the finances of the Victoria Veterinary Benevolent Fund. Open to all members of the N.V.M.A., the first stage of play for the President's trophy and Dr. Bradley's medal, with Captain Simpson's silver spoon for the runner-up, will be in the nature of a divisional competition, and we urge all devotees of the game to send in their names to their Divisional Secretaries without delay. The second and concluding stage of this annual event will be decided over a Congress-town course.

To an unprecedented degree the programme of this year's meeting is one of comprehensive interest, and we would appeal to every reader definitely to decide to support the Association and its President on the occasion of the **N.V.M.A. Jubilee Congress, Folkestone, August 8th-13th, 1932.**

EXTENSIVE OUTBREAKS OF DISTOMIASIS

According to the Agricultural Correspondent of the *Daily Telegraph*, "disaster has fallen upon many flockmasters in the Midlands, Gloucestershire, and the West of England, where outbreaks of liver fluke are reported. Severe outbreaks have occurred in Wensleydale and the Malton, Boroughbridge, and Bedale districts of North Yorkshire.

"The visitation in Yorkshire is the worst for 30 years, and thousands of sheep have died. Cases are to be found even on the Cotswolds, but the menace is at its worst in the valley and low-lying areas of the Severn, Avon, and Teme reaches.

"On one Worcestershire farm the owner does not expect to save one out of a flock of 300 breeding ewes bought last summer. Upon another farm in that county the ewes are dying faster than they can be buried.

"So serious are the losses that many farmers must be ruined. The present generation of sheep breeders has experienced nothing so calamitous as this outbreak. It equals that of the 'seventies of last century.

"The visitation is the result of the prolonged rain of last summer. Little can be effected by farmers now to fight the fluke. The dosing of the sheep to prevent its development should have taken place last autumn.

The 1932 lamb crop will be materially reduced as a result of the present epidemic."

Clinical and Case Reports

CURIOUS SEQUEL TO URETHROTOMY IN A DOG

Hamilton Kirk, m.r.c.v.s.

A wire-haired fox-terrier, about four years old, was brought to the surgery with a history that it had passed no water for two or three days, so far as the owner knew.

Palpation revealed a distended bladder, and an immediate attempt was made to pass a catheter. The latter would not enter further than about four inches, which brought its point slightly behind the penial bone.

A diagnosis of urethral calculus was followed forthwith by an operation for its removal. After the usual preparations, and under general anæsthesia, the urethra was exposed and opened at the point where obstruction was located.

With some difficulty, two large calculi were extracted, and 13 small ones followed with greater ease. The catheter could then be passed in either direction, through the wound, and there was a strong flow of blood-stained urine.

Only the outer coverings were sutured, the urethra being not closed. The dog was given hexamine three times daily, and kept clean and warm.

For the next three days urine continued to escape from the normal and surgical orifices, and I was rather disturbed at the continued desultory hæmorrhage, in small drops, during this period. In my experience this hæmorrhage does not follow urethrotomy in the male cat.

On the fourth day the dog was very lame in the near foreleg, no cause being detectable. On the fifth day hæmorrhage had stopped and the wound was healing nicely. On the sixth day lameness was apparent in the off hind leg, and on subsequent days the dog was hardly able to put either of these legs to the ground. On the tenth day the dog was still lame but was taken home by its owner. This lady telephoned about the fourteenth day to say that the wound had completely healed, that urine was being passed normally and that the dog was well and bright although still lame.

I discussed this curious case with Professor McCunn, who suggested that the lameness might be due to thrombi. This was feasible, perhaps, as concerned a hind leg, but could not be so well explained as regarded a foreleg.

Several days afterwards I was called to the house as the dog was said to be altering in shape. Two cold abscesses were found on one side of the dog, which certainly did give him an odd appearance. They contained a considerable quantity of pus, and were quite painless. Examination of the foreleg on this occasion revealed definite and loud crepitus and I formed the opinion that the neck of the scapula was broken. Strangely enough, however, the same phenomenon could be found in the hind leg, and clinically one would have felt positive that fractures existed. I was amazed at such an idea in view of the careful nursing the dog had had, and I was permitted to remove the patient to the surgery for X-ray examination. All bones were found to be quite intact and I was then unable to explain the condition at all. Professor Wooldridge happened to call at my house one evening and I showed the dog to him. His view was that bursitis was the cause of the crackling sounds, as in his experience a dryness of bursæ will produce this effect. He likened it to the noises produced in dry pleuritis. I have been unable to find reference in any text-book to this phenomenon and it is certainly new to me. I was then puzzled as to the cause of the bursitis. It might, of course, have been due to a systemic infection associated with either the cystitis or the abscesses; or it might have been tuberculous.

Appropriate treatment was advised and nothing more was heard of the case until I one day went to the house, only to learn that three weeks previously the owner had taken the dog to some "clinic" where she was told it should be destroyed. This was done and I was robbed of an opportunity of making a *post-mortem*.

It is quite obvious that when veterinary surgeons are in doubt as the nature of a malady, the quack cannot be expected to offer anything better than an advice of destruction. I certainly thought that a cure could have been effected within six weeks had the owner not lost faith. In so doing she lost her dog.

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SOME ATYPICAL CASES OF ANTHRAX

T. N. Gold, m.r.c.v.s., and V. E. Pratt, m.r.c.v.s., Redditch

In our experience of a large number of cases of anthrax encountered in practice, we have been struck very forcibly by the relatively large number of cases which differed, often markedly, from the classical "text-book" descriptions; it is for this reason that we put the five following cases on record.

Case I.—Telephone message received at 7 a.m., to see a cow at a farm because the butcher who had slaughtered the animal at the owner's request was worried as to whether the carcass was "all right." When we arrived the carcass was hanging in a shed, while the butcher was splitting the two sides. The viscera were outside in the yard. We noticed that the spleen was of an enormous size—it was estimated to be at least 30 times its normal volume. There were large hæmorrhages on all the serous membranes and the lymph glands were all enlarged and hæmorrhagic. The pleura showed hæmorrhages, some larger than the palm of the hand. *Post-mortem* findings were

thus typical of anthrax, but the clinical history as related by the farmer is interesting.

Three days prior to our visit the owner noticed that the animal was a little off its food and administered one pint of linseed oil.

Next day he observed that it was stiff on its legs, which he attributed to its having hurt its back, and he applied a mustard plaster. On no occasion during these two days did the owner consider the animal sufficiently ill to need the attention of a veterinary surgeon. On the third day, the morning in question, he found the animal *in extremis*, and with the help of the cowman " cut its throat."

None of the participants engaged in the slaughter of the cow contracted the disease. The only treatment given by the local hospital was cauterisation of some recent abrasions on the hands of the butcher, who was called in by the farmer to dress the beast on the farm.

This case was confirmed by the Ministry.

Case II.—Called in early one morning to see a cow which the farmer believed to be bleeding to death. The animal in question was lying in a pool of blood, the quantity of which was estimated at one gallon and which appeared to have come from the rectum. She was dead. The carcass was not in the least tympanitic. As a matter of interest a little of the blood on the ground was collected and examined, and the case proved to be one of anthrax. Case confirmed.

Case III.—Yearling pedigree Shorthorn bull. Owner reported lame bull and requested attendance. He did not consider the case urgent, and stated that the animal had been lame for 12 hours or so and would not eat. One of us saw the animal the same day, suspecting blackleg.

Examination.—Marked stiffness of the right hind leg; no evidence of pain, heat or tenderness on palpation. There was no swelling or subcutaneous emphysema. Great depression was the marked feature—head pressed against the wall or else hung very low. Respirations and pulse normal; temperature 102·4° F.; motions normal; no rumination; complete inappetence. Prognosis was guarded. Blackleg suspicion not entirely removed but no definite diagnosis arrived at.

The animal died at 5 p.m., three hours after examination.

The carcass was sent by the owner to the knacker-yard. The man there 'phoned later and told us that the bull had arrived and asked us to come and see it.

Post-mortem.—Enormously enlarged spleen, capsule broken; intense hæmorrhagic gastro-enteritis, peritonitis and a large quantity of inflammatory exudate.

Splenic smears examined microscopically showed a few organisms identical with those of *B. anthracis.* Peripheral blood smears taken from the ear showed the same organism in enormous numbers. Case confirmed.

Case IV.—Black and white heifer, four-and-a-half months old, owner called at the infirmary and requested attendance to inoculate eight calves against blackleg. He remarked that he had already lost one, finding it dead in the pen that morning. Called the same afternoon and vaccinated eight strong calves. Upon leaving saw the dead beast in a loose box. Examination of the carcass showed marked tympanites, everted rectum, hæmorrhage and froth from the nostrils. Subcutaneous emphysema was present around the hindquarters. The case certainly looked like blackleg. Upon enquiry one discovered the feeding of a fresh consignment of cake. The ear was cut off as a speculation, and blood from it examined some hours later upon returning to the infirmary. The case proved to be anthrax and was confirmed by the Ministry.

Remarks.—The beast in question had not left the calf-pen since birth.

The subcutaneous emphysema and history rather rendered one unsuspicious of anthrax (even if it had been suspected at the time). The case was probably a dual infection with *B. chauvœi* plus *B. anthracis* or gas anærobe *post-mortem* invaders.

Case V.—Black cow, calved 24 hours, found by owner down in the field, showing all the symptoms of milk fever. She had been noticed abnormal the previous evening. The cow was dead on arrival.

The owner attributed death to suffocation, as he was unable to keep her head up and she had scrambled into a hollow, lying on her side. Blood was taken and the examination was anthrax positive. Case confirmed.

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A NOTE ON EMPHYSEMA OF A CALF-FŒTUS

T. G. Heatley, o.b.e., m.r.c.v.s.,
Woodbridge.

In obstetric work the question is often asked as to how long an emphysematous calf has been dead.

A case I had this week prompts me to write this note.

A big Friesian cow, up to time, presented her " water bladder " in the early morning. She seemed comfortable and fed, but parturition did not progress and I saw her in the late afternoon, when the herdsman said that she had not " broken away " (slackening of the pelvic ligaments) as usual, as she had had eight or nine calves previously.

I found the os uteri only partially dilated. The calf was very much alive, with the neck depressed between the fore legs, and the nose turned up to the left upper flank, and the right leg across the neck. I straightened this out, but

found that the imperfectly dilated os prevented delivery, therefore I left her till next morning, leaving the fore feet and nose protruding into the vaginal passage. The calf was probably dead before I left, as I had to use the long hook down the throat, the lower jaw having given way with cord traction.

The next morning the cow seemed quite comfortable and was chewing her cud, and the vulva was not swollen. The os was completely dilated, and the head and feet in the passage, but considerable traction had to be employed to effect delivery, as the calf in the interval had become emphysematous in every part, and there was the characteristic disagreeable odour I have previously noted in these cases.

So here we have a fœtus becoming completely emphysematous in twelve hours from being alive.

Annotation

CANINE DISTEMPER IMMUNISATION

Distemper has claimed the attention of clinicians and research workers in various parts of the world over a long period of years, and 1923 witnessed in this country a concentration of effort upon the elucidation of its etiology and the evolution of processes of immunisation, in the programme of research instituted at Mill Hill by the Medical Research Council and the *Field* Distemper Council.

Many organisms had then been incriminated as possible causative agents and numerous attempts made to produce immunity—Trasbot (1875) used cow-pox lymph, Lignières and Physalix (1903) employed attenuated cultures of a pasteurella, and Ferry (1903) made use of *B. bronchisepticus*. The year 1905, however, was rendered notable in the history of distemper research by the finding of Carré, of the Alfort School, that a filter-passing virus was the cause of distemper—a conclusion which has stood the test of confirmatory research and accordingly laid the foundation for modern distemper immunisation processes. It was, in fact, the confirmation of Carré's assertion which constituted an outstanding feature of the second year's work of Laidlaw and Dunkin at Mill Hill (1925).

Meanwhile, Puntoni (1923 and 1924) had produced an efficacious vaccine by " formalinising " the brain of an infected dog, and Lebailly (1927) was able to prepare an antigen by subjecting spleen tissue to the action of formalin. Laidlaw and Dunkin (1928) found that Puntoni's method had several disadvantages and they were not satisfied with the potency of Lebailly's product. They described a method for the production of a potent vaccine by formalising distemper dogs' tissues. They concluded that the immunity produced by this vaccine was of a temporary nature and if this was to be converted into an active and durable immunity, living virus must take some part in the process.

The use of two doses of vaccine (not followed by virus) has not been found to be of much practical use, the immunity conferred not being of a lasting nature.

Laidlaw and Dunkin (1931) described yet another method of securing active and durable immunity, this by the simultaneous side to side injection of a hyperimmune serum (dog) and living virus.

The co-operation of veterinary surgeons for field trials was enlisted on a considerable scale, and in 1929 Dunkin* was able to report: " I think it is fair to say that the results of field work bear out the claim that when susceptible animals are treated in the manner described they are immune to distemper and successfully withstand the disease if placed in contact with dogs so suffering."

From time to time the durability of the immunity against distemper which follows the inoculation of vaccine and virus had been questioned, and during 1928 and 1929 Laidlaw and Dunkin made this a subject of investigation in the field, issuing some hundreds of doses of vaccine and virus to English veterinarians for use in their practices. The immediate result of these inoculations both in privately-owned dogs and in foxhounds was good, but to determine whether or not the late result was also good, attention was confined to foxhounds (these being considered the most severe test of the efficacy of the prophylactic) and a questionnaire was drawn up and circulated to Masters of Foxhounds of 39 packs scattered throughout the country. This enquiry ultimately showed† that vaccine and virus inoculation had, over a period of years, caused a solid and durable immunity, since the hounds so treated had been found to be immune in 98·6 per cent. of cases and the death-rate was down to 0·3 per cent. (In Britain the incidence of distemper in young foxhounds is nearly 100 per cent. and the mortality rate is frequently 50 per cent. and may on occasions exceed 75 per cent.)

It has been found both in this country and in America (where it has been in vogue for some two years) that the use of dried virus is attended with success; and that this product possesses the important advantage that its virulence is more lasting than when the virus is prepared and stored in the wet state. In the article to which reference has been made the authors stated their conviction, from their own findings, that a dry virus was a reliable product, provided that the dessication was carried out with sufficient precautions. Dry

* Address to the Yorkshire Division, N.V.M.A., *Veterinary Record*, Sept. 14th, 1929,

† Dunkin, G. W. and Laidlaw, P. P. *Jour. Amer. Vet. Med. Assoc.* Vol. lxxviii, N.S. 31, No. 4, April, 1931.

products had been sent to America on several occasions and to several places on the Continent of Europe, and had proved to be active on arrival.

Results of the use of this and various other prophylactics in hunting packs are now reported upon by Dalling‡ who compares the relative immunising qualities of double vaccine, serum and virus, and vaccine and dried virus, and expresses an unequivocal preference for the last-named. By field experiment on 1,025 foxhounds it has been found that "vaccine followed by 'dried' virus is at least 99 per cent. efficient as an immunisation method for canine distemper"—a result which represents a highly-satisfactory achievement, reflecting the greatest credit upon all associated with research into this scourge of the canine race.

. . . . .

The attention of readers is also drawn to the interesting contributions published elsewhere in this issue, wherein (1) T. Dalling records an experiment which suggests that the fox is susceptible to infection with canine distemper virus and that successful immunisation can be carried out, and (2) J. R. Cunningham records the efficacy of the Laidlaw-Dunkin attenuated-virus method in a disease simulating distemper which assumed serious proportions in the fox ranches of Prince Edward Island, but in which the infectivity exhibited by distemper was not demonstrated amongst the canine population.

W. B.

‡ *The Veterinary Journal*, Vol. 87, No. 12. December, 1931.

Sir Frederick Smith Memorial

Eighth List of Subscribers.

	£	s.	d.
Previous list (Dec. 5th, 1931) ...	208	18	6
Bell, Major J., R.A.V.C.	0	10	6
Clark, Eaghan	0	10	6
Golding, Major G. V., R.A.V.C. ...	0	10	0
Heane, Major C. W., R.A.V.C. ...	0	10	0
Hodgins, Major R., R.A.V.C.	0	10	0
Jerrom, Capt. H., R.A.V.C.	0	7	6
Lancashire Veterinary Medical Association	3	3	0
Lawrence, Major C. J. R., O.B.E., R.A.V.C.	0	10	0
McGregor, Major J. G.	0	10	6
McInnes, Dr. J.	2	10	0
Miller, W. T. C.	1	1	0
Murphy, Major, M.A., R.A.V.C. ...	0	10	0
O'Rorke, Lieut.-Colonel F. C., C.M.G., R.A.V.C.	0	15	0
Poer, Capt. L. H. B., M.C., R.A.V.C. ...	1	0	0
Rouse, Major W. M., R.A.V.C. ...	0	10	0
Scott, Capt. F. C.	0	10	6
Scottish Metropolitan Division ...	2	2	0
Sinton, Major W. L., R.A.V.C. ...	0	10	0
Southall, Major J., R.A.V.C. ...	0	10	0
Steevenson, Major G. F., R.A.V.C. ...	0	10	0
Stephenson, Major H., M.C., R.A.V.C.	0	10	0
Stewart, Major H. C., R.A.V.C. ...	0	10	0
Tillyard, Major G. E., O.B.E., R.A.V.C.	0	10	0
Warburton, Capt. and Q.-M. A. J. ...	0	7	6
	£228	6	0

Reviews

[**The Genius of Louis Pasteur.** Compton, Piers. Published by Alexander Ouseley, Ltd., London, and The Macmillan Company, New York. 361 pages with a foreword, 15 chapters and 8 illustrations—Price 12s. 6d.]

Lord Lister, representing the Sciences of Medicine and Surgery at the Celebrations of the seventieth birthday of Louis Pasteur held in France in 1892, said that they owed more to Pasteur than to anyone else in the whole world. This admirably written book is an account of how such an authority could arrive at that conclusion. It traces the life of Pasteur from his birth in humble circumstances in 1822 till his death in 1875 and gives us a clear, straightforward picture of the difficulties, trials and disappointments experienced by this great scientist in convincing the various authorities the world over of the truth of his findings. The history of the evolution of the causation of disease from the then prevailing idea, *i.e.*, spontaneous generation, to the germ theory with which Pasteur's name will ever be associated, is finely depicted. The criticisms of the "unbelievers" who pitted themselves against Pasteur and who, in spite of the classical field experiments conducted at Pouilly le Fort in connection with his anthrax investigations, still criticised, are well worth reading. Pasteur's remark in reference to one such critic "he contradicts for the sake of contradicting and does not believe because he will not" clearly indicates the attitude he adopted because of his convictions of his theories.

The chapters dealing with Silkworm Disease, Anthrax, Fowl Cholera, Hydrophobia and Swine Erysipelas are of special interest to the veterinary profession. They have to be read to make one appreciate the comparative ease with which a piece of research can be undertaken to-day.

The antipathy of the medical and veterinary professions is clearly brought out—though there may be some excuse for this, seeing that Pasteur was a member of neither profession but essentially a chemist interested in crystals, chemical reactions and fermentations, till he was practically forced to investigate the diseases of silkworms and following which, his researches into the diseases of animals revolutionised the prevailing ideas as to causation and treatment. He made many enemies, but they were enemies simply because of their refusal to agree with Pasteur's theories and bore him no malice as a man. His friends, however, stood by him firmly and there are no passages in the whole book more impressive that those referring to his great friendships and to his family life which played such a part in the success of his work.

Great credit is due to the author for the

thoroughness with which he has delved into the various records and the literature of the time to enable him to link together the story in such an interesting and absorbing manner.

We can conscientiously recommend this book to the veterinary profession, not so much for the scientific information contained, though this is quite accurate, but more for the inspiration derived from its perusal. We as a profession owe much to Pasteur.

The publishers have produced the book well.

* * * * *

[**The Science of Meat and Biology of Food Animals.** Line, E. C., B.Sc. (Lon.). Published by Meat Trades Journal Co., Ltd., 57, Cowcross St., E.C.1.]

This book, consisting of 560 pages, is an attempt by the author to teach to students of an Institute training young lads the trade of practical butcher the subjects set out as follows:—

1. General biology.
2. Anatomy and physiology.
3. Diseases and meat inspection.

Obviously this is a hopeless task, as anyone who has studied science will at once admit.

The publishers state " the time available, six months, to produce a text book ready for the autumn session was barely sufficient and all possible speed had to be used by the author in the collation of notes, references and investigations."

Great credit must be given to the author for the amount of labour he must have put into his work.

There is nothing original in the subject matter which, as he admits, has been extracted from a large bibliography. We note the concluding remarks of the publishers, *viz.*: " It is hoped, therefore, that the contents of other excellent books will not be judged by the exceptional standard of the Science of Meat and Biology of Food Animals." *(sic.)*

There is throughout the book a constant reference to the human subject which leads to confusion, *e.g.*, in describing circulation the words " superior " and " inferior " are used instead of " anterior " and " posterior." In the frontispiece the inferior vena-cava is shown as running along the ventral surface of the abdomen.

In the description of sheep there appear the words " there has since been some deterioration in the former (wool) by reason of the introduction of merino wool." We wonder what Australian and South African wool growers would say to this. In describing Johne's disease it is stated that " the bacilli have never been cultivated artificially." Evidently the author has never heard of Twort and Ingram, amongst others, or of the production of " Johnin " by Dunkin, Sheather and other workers. Again there is the statement " it is communicable to no animal except the ox." This is incorrect. In the article on caseous lymphadenitis it is stated that 60 per cent. of French sheep are affected. This is denied by French research workers and the statement that old merino sheep are most liable to the disease is incorrect, as is also the assertion that the spleen and kidneys are never affected.

In describing onchocerciasis it is stated that 70 to 90 per cent. of South American cattle are affected. This is not in accordance with facts.

There is much useful information in the book which, as the author states, may save the student reading many large text books, but the contents require drastic re-editing and correcting. It attempts too much in so small a space and we doubt if any lad intending to be a practical butcher would benefit by attempting to gain a smattering of so many subjects which it would take years of close study by a student of science to attain. For the young butcher it is much more essential that he obtains a thorough training in efficient salesmanship, hygiene, keen buying, selection of best meat to suit customers, good display of meat with cutting and weighing so as to avoid waste and loss.

Reference is made occasionally to another book for students as if it were authoritative. In our opinion, much of the subject matter of the book referred to is not original or authoritative.

The publishers have done their part of the work very well. The printing and the binding are excellent.

DOG LICENCE LIABILITY

A recent police-court case brought out a point which came as a surprise to many owners of dogs. It was stated that when the owner of a dog died the licence for that dog became void, and a new licence had to be taken out. The magistrate's clerk suggested that the danger of a widow being prosecuted for keeping a dog without a licence a few days after the death of her husband might be overcome by taking out licences in the joint names of husband and wife.

"An official of the London County Council stated," says *The Times*, " that so far as he could ascertain there was no provision for the issue of a licence in the joint names of husband and wife. A Post Office official to whom the point was referred said that as these were local taxation licences administered by the county councils he could not express an opinion upon it. In the case of wireless licences, however, the legal position was quite clear. A wireless licence would not be issued in the joint names of husband and wife."

* * * * *

Allegations concerning illicit pig slaughtering and unhygienic conditions were considered at a meeting of the Northern Council of Butchers' Associations. It was declared that the business of meat traders was being ruined by this illicit pig killing in certain villages in Durham. One butcher said he did not object to any person keeping a pig and killing it, but in the cases in question a practice was being made of it, as many as 30 pigs being killed in this manner.

Abstracts

[A Case of Intra-capsular Cyst (Hygroma renis intra-capsulare) in the Cat. (Trans-title.) Andersson, A., *Skan. Vet.-tidskft.* 1931. xi. 341-353.]

The author discusses briefly the various changes known to lead to cyst formation in or around the kidneys. One type, the so-called Hygroma renis intra-capsulare (Ponfick), S. subkapsular hydronefros (Kirmisson, Albarran), S. perirenal cystoid (Schmey), appears to have been recorded in man and pig only, the instances in the latter being briefly reviewed. An instance of intracapsular cyst of the kidneys of a cat is dealt with in detail under the headings of symptoms, *post-mortem* examination, macroscopic and microscopic characters, and finally possible etiology. Two figures and 31 references are given.

The cat, a male (presumably not castrated —G. B. B.), 11 years of age, had shown variable appetite during the last few months, with loss of spirits and progressive abdominal enlargement. Clinical examination revealed an intra-abdominal swelling at the level of the root of the mesentery, the size of a clenched fist. Three hundred c.c. of clear slightly yellow serous fluid were drawn off through a canula passed through the right flank. The animal was destroyed at the owner's request. *Post-mortem* findings were as follows:—200 c.cs clear fluid, tinged faint yellow, in abdominal cavity; half the latter was occupied by two soft fluctuating cysts the size of a clenched fist lying in the " kidney region," suggesting at first sight hydronephrotic or cystic kidneys. Palpation, however, revealed each kidney as a walnut-sized body lying within the respective cysts. A little fat lay around each of the latter which were anchored dorsally but were separate from each other and not adherent to other organs. The right cyst was a little smaller and on section it was found to be filled with fluid similar to that lying in the abdominal cavity; in the cyst wall was the canula-perforation. The cyst had obviously been more distended originally but partial collapse had occurred through puncture and leakage. The fluid now presented amounted to 250 c.cs. The right kidney, exposed by incision of cyst wall, was surrounded by a fibrous capsule intact in its greater part. Macroscopically the cyst appeared to be intra-capsular. In the region of the hilus the capsule seemed to divide into two parts, an inner one following the kidney contour and an external one forming the outer wall of the cyst. A circular area around the hilus did not share in this arrangement. Both capsular sheets were grey-white in colour and semi-translucent. The right kidney was firmer than normal and deformed at the posterior pole by a scar-like contraction in the region of which the renal capsule was adherent, though elsewhere easily separable. On section a wedge-shaped mass of fibrous tissue extended into the medulla in the region of the surface scar.

The left kidney was similarly involved, the cyst containing 300 c.c. of thin reddish fluid with small blood coagula. The cyst wall was thicker, and its inner face roughened and irregular and lined by partially organised blood clot. A hæmatoma was located in the ventral part of the cyst wall and completely separate from the cyst cavity proper. The kidney itself was small, deformed, and the capsule separated with difficulty. On cross section considerable fibrosis was seen.

The microscopical features of both the kidneys of the capsules and the cyst walls are fully discussed with special reference to characters which might elucidate the etiology. The theories as to the cause of this condition in man and other animals are discussed with their significance in relation to the findings in this case.

G. B. B.

* * * * *

[The Control of Contagious Bovine Abortion. (Trans-title.) Lagerlöf, N. *Svensk. Vet.-tidskr.* 1931. 5. 197-201.]

Lagerlöf agrees with Thomsen of Denmark that attempts to eliminate contagious bovine abortion from Sweden by means of the blood test will fail; the writer further contends that there is no other method that can be adopted with success in that country. The blood test as a control measure has, however, a field of application. By it any non-infected farms should be detected and all stud farms rendered free and maintained free of the disease. Simultaneously the education of the farmer in hygiene and its application to abortion in cattle must be proceeded with.

G. B. B.

* * * * *

[Austrian Ministerial Order Concerning Commercial Traffic in Cow's Milk. *Tierärztl. Rdsch.* xxxvii. 497.]

Milk originating from different dairy farms and subsequently mixed must be heated for three minutes at 80° C. or for 30 minutes at 63° C., and cooled immediately afterwards to a temperature below 7° C. before it is allowed to pass into retail distribution.

Milk originating from dairies where it is filtered and cooled below 7° C. immediately after milking, and where the attendants, the animals and the procedure are supervised efficiently by the medical, veterinary and sanitary authorities is exempt from compliance with this rule.

Milk must be sold in closed containers only, and sealed in such a manner as to facilitate the detection of bottles which have been opened or

tampered with. It must not be exposed for sale in open vessels in bulk.

Milk originating from cows suffering from notifiable diseases, from cow-pox, from *Bact. enteritidis* infection, from febrile conditions, from diseases of the genital organs, from skin eruptions, from mastitis, etc., must not be sold or passed into retail distribution.

The remainder of the order is taken up by regulations pertaining to the correct descriptions and their definitions of various grades of commercial milk and milk products as sold in Austria.

The order became operative from May 1st, 1931.

H. F.

* * * * *

[A Short Communication regarding Treatment of Foot Mange ("Scaly Leg") in Fowls. Haupt. *Tierärztl. Rdsch.* xxxvii. 592-593. 2 refs.]

The author places on record his observations in connection with the treatment of *Cnemidocoptes mutans* infestation of fowls on an industrial poultry farm.

In a vessel of about 10 litre capacity, 5 g. of sod. fluoride for each litre of water (0·5 per cent.), heated to 40° C. are dissolved. All affected birds, as well as the healthy ones, are held by the wings, and their feet are immersed for about 15 seconds in this bath, the solution being gently rubbed into the skin with the other hand until the skin and scabs are thoroughly soaked. During warm weather the treatment is repeated at two to four weeks intervals. Three baths will suffice for an effective cure, for the author succeeded in achieving a cure after one immersion only. If the crusts be very hard, they should be softened and carefully detached before the bath in a warm sod. bicarbonate solution or in a soft soap emulsion. As sod. fluoride is a very dangerous poison, the contents of the bath after use must be destroyed, and precautions taken that runs, feeding grounds and food are not contaminated by the wash.

H. F.

ARMY VETERINARY SERVICE

Promotion Examinations

An Army Order announces that the periods of Military History selected for next year's examinations for promotion of Majors of the Royal Army Veterinary Corps are as follows:—

Majors, R.A.V.C. (in Sub-head (k) (ix), App. X., King's Regulations 1928). March, 1933:—"The Veterinary Services in South Persia, North and South Russia," and "The Veterinary Services with the British Remount Commissions in Canada, North America, and Uruguay," as described in the Official History of the War Veterinary Services, Chapters XVIII to XXII. October, 1933:—"The Veterinary Services with the Egyptian Expeditionary Force, 1918," as described in the Official History of the War, Veterinary Services, pages 221 to 276 and Chapter XXVI.

ROYAL COLLEGE OF VETERINARY SURGEONS

Quarterly Meeting of Council

A Quarterly Meeting of Council was held at the Royal College, 10, Red Lion Square, London, on Friday, January 8th, 1932.

Mr. G. P. Male (President) was in the chair and the following members were present:—Major J. Abson, Dr. O. Charnock Bradley, Lieut.-Colonel J. W. Brittlebank, Professor J. B. Buxton, Captain J. C. Coleman, Professor J. F. Craig, Major G. W. Dunkin, Professors S. H. Gaiger, F. T. G. Hobday, Messrs. J. Holroyd, R. Hughes, G. H. Livesey, G. H. Locke, Sir John M'Fadyean, Professor J. Macqueen, Mr. W. Nairn, Major D. S. Rabagliati, Dr. J. Share-Jones, Lieut.-Colonel P. J. Simpson, Captain R. Simpson, Major A. Spreull, Colonel G. K. Walker, Dr. A. W. Whitehouse, Mr J. Willett, Professor G. H. Wooldridge and Lieut.-Colonel T. Dunlop Young.

The minutes of the last meeting were taken as read and signed as correct.

Obituary List.—The Registrar read the List of Members and Fellows whose deaths had been recorded during the quarter.

Letters of apology for absence were received from Mr. Clarkson (who intimated his intention not to seek re-election); from Mr. McIntosh (absent on account of the death of his father) and from Dr. Sheather, Mr. Spencer and Captain Wragg.

The President: Gentlemen, I am sure that you will all be very sorry to hear the reason for Mr. McIntosh's absence, and I think that you will wish me to send him a letter expressing our sincere sympathy for him in his bereavement, and our affectionate regards. Is that your wish, Gentlemen?

The meeting signified assent.

The President continued: I am sure, also, that you will be sorry to hear the decision to which Mr. Clarkson has come, and will hope that he will reconsider it. I am sure that we shall miss his very wise counsel very much indeed.

Royal Institute of Public Health: Congress.—A notification was received from the Royal Institute of Public Health inviting the appointment of delegates to the next Congress to be held in Belfast from May 10th-15th, at which Congress will be sections of State medicine and municipal hygiene, industrial hygiene, women and children and the public health, tuberculosis, pathology, bacteriology and biochemistry. It was agreed that delegates be sent and these be Colonel Young and Professor Craig.

National Association for the Prevention of Tuberculosis: 18th Annual Conference.—An invitation was received to appoint a delegate to the 18th Annual Conference of the National

Association for the Prevention of Tuberculosis, which is being held from July 21st-23rd in the University of London.

It was agreed that the President or his nominee be asked to attend.

Admissions to Membership.—The Registrar read the list of members admitted to the College since the last quarterly meeting.

Reports of Committees

Finance and General Purposes Committee.

Mr. Locke read the report of a meeting of the Finance and General Purposes Committee held on January 8th as follows, and moved its reception and adoption:—

The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

The Treasurer submitted his Financial Statement for the Quarter, showing a balance in hand of £1,091 11s. 11d., and liabilities amounting to £274 17s. 10d.

The Treasurer's statement was approved and he was ordered to pay the liabilities shown together with cheques for current expenditure.

The Secretary reported six cases of members in arrears of more than two guineas for Annual Fees and was instructed to take the necessary steps to recover payment.

The Treasurer was authorised to arrange with the Bank, if necessary, for an overdraft up to £500.

The Treasurer reported he had authorised the purchase of a new duplicator at a total cost of £19 19s., and his action was approved.

Library Bequest.—The Secretary reported the receipt of a communication from Messrs. Barclays Bank stating that the late Mr. A. J. Sewell had bequeathed to the College the sum of £250 for the purpose of the Library Fund, the same to be paid to the College on the death of his widow.

Congress Fund.—The Secretary reported that the Executive Committee appointed to close the accounts of the recent International Veterinary Congress had voted to the Royal College of Veterinary Surgeons, out of the capital Balance remaining in the British Congress (1914) Fund, the sum of £1,000 in five per cent. War Loan, the interest to be used for the maintenance of the War Memorial Library. The Committee had also decided to transfer to the College the balance in hand in the current account of the British Congress (1914) Fund, amounting to about £50, together with the stocks of reports of the 1914 Congress and the 1930 Congress, with the suggestion that the proceeds of sales of these reports should be credited to the Library Account.

It was resolved that the cordial thanks of the Council be conveyed to the Congress Committee for their generous action and also to the General Secretary whose services enabled economies to be effected in the organisation of the Congress.

Captain R. Simpson seconded the motion.

The President: I am sure that you will all be very pleased to see this reference to the disposal of the Congress Fund. It will be a godsend to the College, and we shall all endorse the last paragraph of the report:—

"That the cordial thanks of the Council be conveyed to the Congress Committee for their generous action, and also to the General Secretary, whose services enabled economies to be effected in the organisation of the Congress."

The motion was carried.

Examination Committee.

Professor J. B. Buxton read the report of a meeting of the Examination Committee, held on January 7th, as follows, and moved its reception and adoption:—

The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

Reports on December Examinations.

(*a*) *Membership.*—Reports of Chairman of Court of Examiners, Delegates and Local Secretaries were received. Arising out of these it was resolved:—

(i) That every effort be made in future to prevent undue haste at the oral examinations, and that to this end the issue of the official timetable be delayed until as complete information as possible as to the number of students to be examined is available.

(ii) That the Chairman be authorised to communicate with the Examiners with regard to the supervision of the practical examination in Class D, Surgery.

(iii) That Local Secretaries be authorised, when posting the results of the examination, to include those students who are referred in one subject.

(*b*) *Fellowship.*—The Secretary reported as follows:—

Since the previous meeting four entries for the Fellowship Diploma have been received, namely, Nos. 80, 81, 82 and 83.

The Examiners' reports on the first three have been received, and are as follows:—

80. The thesis is not satisfactory as regards literary presentation or in other respects, and is not in a form suitable for publication. Our recommendation is that the thesis cannot be accepted as reaching Fellowship standard.

Signed: W. Horner Andrews.
T. J. Bosworth.

81. The thesis being satisfactory as regards literary presentation, and in a form suitable for publication, the candidate was examined orally in defence of his thesis. At the oral examination the candidate did not show a satisfactory knowledge of the subject of his thesis, and was unable to defend many of his deductions. His general knowledge of veterinary medicine was also unsatisfactory. We do not recommend the award of the Diploma.

Signed: S. J. Motton.
W. Horner Andrews.

82. "The Clinical Aspect of Differential Diagnosis of Diseased Conditions and Abnormalities of the Mouth and Feet of Cattle, Sheep and Swine, with particular reference to Foot-and-Mouth Disease."

The thesis having been found satisfactory as regards literary presentation and in other respects, and being in a form suitable for publication, the candidate was called up for an oral examination.

At the oral examination he defended the thesis satisfactorily and showed a satisfactory degree of general knowledge in connection with medicine. We accordingly recommend that he be awarded the Fellowship Diploma.

Signed: W. Horner Andrews.
S. J. Motton.

It was resolved that the reports of the Examiners be approved, and that the Fellowship Diploma be conferred on candidate No. 82, Mr. G. Eaton.

A list of educational certificates Nos. 3874-3909, 3915-3920, which, being in order, had been passed by the Secretary, was approved.

The educational certificates submitted by the following candidates were accepted: 3910, 3911, 3913, 3915.

Exemption under the provisions of Bye-law 62 was granted in the case of the following candidates: 3873, Fiennes, R. N. T. W., B.A. (Camb.); 3921, Walther, A. L., B.A. (Camb.); 3922, Dakha, H. S., B.Sc. (Punjab).

The report of the Auditors was submitted showing that Mr. S. L. Hignett was entitled to the Williams Memorial Prize in respect of examinations passed during the year 1931. It was resolved: That the Williams Memorial Prize be awarded to Mr. S. L. Hignett, of the London Veterinary College.

The appointment of Mr. C. Formston as Internal Examiner at the Royal Veterinary College in the subject of Stable Management was approved.

A report was received from the Class C Examination Sub-Committee, and circulated to the members present. Discussion of the report was postponed to the next meeting.

In this connection, letters were received from the Academic Board of the Royal Veterinary College, London, and the College Council of the Royal (Dick) Veterinary College, Edinburgh, pointing out that the Secretary had addressed communications direct to the Students' Representative Councils, which communications ought to have been sent through the Principals of the Colleges. The Secretary was instructed to reply that the Committee had taken due note of the communications received.

Major A. Spreull seconded the motion.

The motion was put to the meeting and carried.

Special Meeting (*Examination Committee*):

Professor J. B. Buxton read the report of the Special meeting of the Examination Committee held on January 7th, as follows, and moved its reception and adoption:—

The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

Letters were received from the Principals of the Royal Veterinary College, London, and the Royal Veterinary College of Ireland, Dublin, enquiring whether students who entered the Colleges after January, 1932, would be eligible to be registered as students of the four years' course. It was resolved: "That examinations under the present four years' course be continued in respect of all students registered as having commenced attendance at an affiliated College not later than the beginning of the summer term, 1932, and certified as having satisfactorily attended the first year's classes during that term."

Five Years' Curriculum.

(*a*) *Syllabus in Pathology.*—The question of the consequential amendments to the Syllabus in Pathology following upon the formation of a separate table in Veterinary Parasitology was considered. It was resolved: "That the following be adopted as the Syllabus in Pathology:—

Veterinary Pathology—Written, three hours: Oral and Practical, one hour.

(*a*) Morbid Anatomy, Pathological Histology, Bacteriology, Mycology, and the study of filter-passing viruses, in relation to diseases and other morbid conditions of the domesticated animals.

(*b*) Methods of Clinical Pathology. Course of Instruction—not less than 150 hours."

(*b*) *Veterinary Parasitology.* It was resolved: "That the number of hours to be allotted to the Course of Instruction in this subject be reduced from 150 to 90, and that the length of the written examination in this subject be reduced to two hours."

Schedules to Syllabus.—It was agreed to refer the preparation of lists of British Breeds of Livestock and of Forage Plants and Medicinal and Poisonous Plants to a Special Committee consisting of the Chairman, Professor Macqueen, and Professor Wooldridge.

The motion was seconded by Mr. Hughes and carried unanimously.

Registration Committee

The Registrar read the report of a meeting of the Registration Committee held on January 6th, as follows:—

The Minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

Cases Against Non-Members.

2074 P. D. S. A.—Correspondence was submitted and the Secretary was instructed as to the action to be taken.

2152.—"Canine Medical Service."

2304.—"Veterinary Practitioner."

N.33.—"Canine and Feline Specialist."

N.51.—"Veterinary Surgeon."

N.54.—"Canine Specialist."

These cases were ordered to stand over for further evidence.

N.44.—Display of deceased husband's name and qualifications. The Secretary reported that the offence in this case has now been discontinued.

N.53.—Using title "Consultant in Canine Ailments." The Secretary was instructed to require an undertaking in this case.

N.55.—"Canine Surgery."

N.56.—"The Veterinary."

These cases were referred to the Solicitor with authority to prosecute under the Veterinary Surgeons' Act if proper evidence is obtainable.

N.57.—"Veterinary Surgery." This case was deferred for further evidence with a view to a prosecution under the Veterinary Surgeons Act.

Correspondence was submitted and the Secretary was instructed as to the replies to be sent.

On the motion of the President, the Report was received and adopted.

The Registrar read the report of the meeting of the Registration Committee held on January 7th, as follows:—

The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

Cases.

2444.—Advertising "Jaxon's Animal Shilling Remedies." It was resolved: "That this member be called upon to appear at the next meeting of the Registration Committee to answer a charge of a breach of Bye-law 53(i).

2462.—Advertising. The Secretary submitted a satisfactory undertaking in this case.

2466.—Advertising in New South Wales. The Secretary was instructed to require an undertaking from this member to be submitted not later than June 1st, 1932, failing the receipt of which the member to be informed that the Council will proceed to pass judgment in the case.

2480.—Alleged supersession. It was resolved that there was no case.

2481.—Alleged cruelty. A satisfactory explanation was received in this case.

2482.—Police Court Conviction. The Secretary submitted a report from the Chief Constable at Blackpool which was ordered to be filed.

2483.—Advertising on labels. The Secretary was instructed to call this member's attention to the desirability for an amendment of the wording of his labels.

2484.—Police Court Charge. The Secretary submitted a report received from the Chief Constable of Edinburgh together with a letter of explanation from the member.

It was resolved: "That the report be filed, and that the member be warned as to his future conduct."

2485.—Advertising by publication of interview in newspaper. A letter of explanation was received from this member which was accepted.

2486.—Alleged advertising. It was resolved that there was no case.

2487.—Alleged covering. The Secretary was instructed to obtain further information in this case.

Correspondence.—(*a*) Correspondence was received from a member relating to letters addressed by another member to his employers and the Local Chief Constable. The Secretary was instructed to communicate with the accused member to ask for his observations on the matter.

(*b*) Letters addressed to the Secretary by a member in regard to the conduct of another were submitted and the reply of the Secretary was approved.

(*c*) A letter dated December 3rd, 1931, was received from Dr. R. F. Montgomerie which was ordered to lie on the table.

Home Office Instructions.—The Secretary was instructed to communicate with the Home Office pointing out that their instructions to Chief Constables and Prison Officials with regard to reporting cases against veterinary surgeons were not being uniformly carried out.

Hospitals and Boarding Kennels for Dogs. It was resolved: "That, with a view to devising means for protecting the interests of qualified veterinary surgeons, a Sub-Committee be appointed, to inquire into the whole question of the conduct of canine and feline veterinary practice, with special reference to the carrying on of hospitals and boarding kennels by laymen ostensibly "under veterinary supervision," and to the advertising of the same.

(*b*) That the Sub-Committee consist of the following members with power to co-opt other members and to take evidence: Lieut.-Colonel J. W. Brittlebank, Capt. J. C. Coleman, Professor F. T. G. Hobday, Messrs. J. Holroyd, G. H. Livesey, G. H. Locke, J. Willett and Professor Wooldridge.

The President: I move the reception and adoption of this report.

Lieut.-Colonel Brittlebank seconded the motion, which was put to the meeting and carried.

The President: I move that the Seal of the College be attached to the authority for the prosecutions authorised.

Major Dunkin seconded the motion, which was put to the meeting and carried.

Parliamentary Committee

Lieut.-Colonel Brittlebank read the report of the meeting of the Parliamentary Committee held on January 6th, as follows, and moved its reception and adoption:—

The minutes of the previous meeting, having been printed and circulated, were taken as read and signed as correct.

Veterinary Surgeons (Irish Free State Agreement) Bill.—The Secretary reported that the Veterinary Surgeons Bill, to confirm the agreement made with the Irish Free State, had passed its second reading in the House of Lords on December 9th, 1931.

A communication was received from the Under-Secretary of State for Dominions Affairs, transmitting a notification under Sect. 24 of the Irish Free State Veterinary Surgeons Act, 1931, declaring that the Register of Veterinary Surgeons for Saorstat Eireann had been established as on and from January 1st, 1932.

Veterinary Advisory Officers.—A resolution passed by the North Wales Division of the N.V.M.A., urging the Council to continue their endeavours to bring about the inclusion in the list of duties of Veterinary Advisory Officers of a clause definitely prohibiting any action by Advisory Officers in breach of the bye-laws of the College, was considered. It was resolved: "That the Secretary of the Division be informed that any case where evidence is produced that the bye-laws of the College are being transgressed, should be reported at once to the Council."

Agricultural Research Council.—A letter was received from the Secretary of the Committee of the Privy Council for Agricultural Research, regretting that it was not found possible to appoint a veterinary surgeon to the Agricultural Research Council, but stating that the Committee of the Council on Animal Diseases proposed to co-opt members of the veterinary profession. It was resolved: "That the Secretary be instructed to inform the Committee of the Privy Council for Agricultural Research that the Council of the College had learned with pleasure of the co-opting of Sir John Moore and Major Montgomery to serve on Committees of the Agricultural Research Council, but desired to express the hope that when a vacancy does occur in the constitution of the Council, the appointment of a veterinary representative will not be overlooked."

It was resolved that Messrs. Sherwood & Co. be re-appointed Parliamentary Agents.

It was resolved that the subscription to Parliamentary Debates be discontinued.

An invitation was received to appoint representatives to attend a conference to consider the advisability of appointing a technical committee regarding the slaughter of animals. It was resolved to appoint Professor Hobday and Colonel T. Dunlop Young to represent the Council at the forthcoming conference, and to report any proposals made to this Committee at its next meeting.

It was resolved that Professor Wooldridge be appointed to represent the Council on the National Milk Publicity Council.

Mr. W. Nairn seconded the motion.

Mr. J. Willett: Will the Irish representatives be elected to Council this year—this coming year?

Professor Craig: That will depend entirely on the passage of this Bill through Parliament and the time at which the passage takes place. I presume that, when the Bill is passed, a Charter will almost simultaneously be granted, and if that takes place, members of the Irish Council will be elected to act upon the General Council.

Lieut.-Colonel Brittlebank: I am obliged to Professor Craig for so capably answering for me. He knows more about it than I do.

The motion was put to the meeting and carried.

Publication and Library Committee

Mr. G. H. Livesey read reports of meetings of the Publication and Library Committee held on November 11th, December 3rd and January 8th as follows, and moved their reception and adoption:—

November 11th, 1931.—In the absence of the Chairman, Mr. J. W. McIntosh was elected to the chair.

The minutes of the previous meeting, having been approved by the Council, were taken as read and signed as correct.

Estimates for printing the Register for 1932 were received from Messrs. Adlard's, Bale's, Baillière, Tindall & Cox, Grubb's, and Taylor and Francis.

After consideration, it was decided to defer the question to the next meeting, the Secretary being instructed in the meantime to obtain revised estimates allowing for certain omissions in the geographical lists.

December 3rd, 1931.—The minutes of the previous meeting were read and signed as correct.

Revised estimates for the printing of the Register were received and considered.

It was resolved:—

(*a*) That the estimate of Messrs. Taylor & Francis, amounting to £279 10s., *plus* cost of alterations in proofs, be accepted for the year 1932.

(*b*) That in the geographical lists the entries be restricted to the name of the member and the town in which he resides, and that the further estimate of Messrs. Taylor & Francis, making an allowance of £6 10s. for this reduction, be accepted.

(*c*) That the whole question of the contents and form of the Register be reconsidered before reprinting the Register for 1933.

January 8th, 1932.—The minutes of the previous meeting were read and signed as correct.

The Librarian submitted his report for the quarter, showing that 76 books had been sent out on loan, including five issued through the National Central Library. The number of visitors who had signed the book during the quarter was 42. Owing to the congestion of the shelves devoted to periodicals, considerable re-arrangement had been found necessary, and space had been provided by relegating many closed periodicals to the gallery.

The Librarian's report was approved.

The Librarian reported that since the last quarterly meeting presentations had been made as follows:—

By D. Hamilton—Youatt on the Horse; Dobson on the Ox; White's Compendium; Mayhew's Illustrated Horse Doctor.

By Sir F. Colyer—"Abnormal Conditions of the Teeth of Animals."

By Professor Macqueen—Huzard on Glanders; Felizet's Operation for Intestinal Calculus.

Per Mr. Livesey, from Dr. Walter Harrison, "White's Treatise of Veterinary Medicine," Vol. II, 1896.

Reports from Veterinary Departments, Calendars of Universities, pamphlets and reprints, together with the usual periodicals.

It was resolved: "That the thanks of the Council be addressed to the respective donors."

"Copy" for advertisements in the 1932 edition of the Register was submitted and approved.

It was resolved to form a Sub-Committee to consider the revision of the Register before publication in 1933, the Sub-Committee to consist of the Chairman, Mr. McIntosh, Dr. Sheather, Colonel Walker, and the *ex-officio* members.

The motion was seconded by Mr. Holroyd, and was carried unanimously.

Annual Meeting, 1932

The President: Now, Gentlemen, we have to decide the place of the next Annual Meeting.

The Secretary: June 2nd is the date of the Annual Meeting, which is usually held in London.

Lieut.-Colonel Brittlebank: I move that the meeting be held in London.

The motion was seconded by Professor Buxton, and carried.

Annual Dinner

The President: Is it your wish that there should be an Annual Dinner? It has been usual in the last few years.

Mr. Willett proposed and Major Dunkin seconded the motion: "That an Annual Dinner be held in 1932."

The motion was carried unanimously.

The President: Then the date.

The Secretary: The Dinner has been usually held on the Wednesday or Thursday preceding the Council Meeting in July. That would, therefore, be Wednesday, June 29th, or Thursday, June 30th, if similar dates to those in previous years are chosen.

Major Abson: I beg to move that the Annual Dinner be held on Thursday, June 30th.

The President: It is proposed by Major Abson that Thursday, June 30th, be the date of the Annual Dinner.

The motion was put to the meeting and carried.

The President: I hope that we shall have a very enjoyable evening, and that you will all come and support the President at the Dinner, with your friends.

It is usual to have a Dinner Committee.

Lieut.-Colonel Brittlebank: I beg to move "That the previous Dinner Committee operate, and be re-appointed."

Professor Buxton seconded the motion.

The President: Who are the previous Dinner Committee? Can you give me their names?

The Registrar: The previous Dinner Committee was Professor J. B. Buxton, Major G. W. Dunkin, Mr. J. W. McIntosh, Mr. T. F. Spencer, Mr. J. Willett and Professor G. H. Wooldridge, with power to co-opt.

The President: I will put to you "That that Committee be asked to act again this year."

The motion was carried unanimously.

The President: That closes the Quarterly Meeting of Council.

N.V.M.A. Divisional Report

NORTH MIDLAND DIVISION N.V.M.A.*

Annual Meeting at Sheffield

The Annual Meeting of this Division was held at the King's Head Hotel, Change Alley, Sheffield, on December 18th, 1931, when there were present Messrs. R. Hudson (in the chair), D. D. Canning, W. Collinson, G. D. Coward, T. C. Fletcher, E. G. Johnson, E. Marrison, H. Thompson, G. Tullis, A. Walker, and W. Tweed (Hon. Secretary). The visitors were Messrs. W. T. Macgregor (Skipton), J. M. McKeller, T. McWilliam and H. L. Torrance.

The minutes of the last meeting were taken as read and confirmed.

Correspondence with the N.V.M.A.—In connection with the treatment of sick animals of the poor, it was decided to call a meeting of the veterinary surgeons of the city to formulate a scheme for submission to the R.S.P.C.A.

Mr. Coward moved and Mr. Tullis seconded that the Hon. Secretary be asked to approach the editors of the local papers with a view to the publication of an article on "The Veterinary Profession and its Obligations to the Public." This was carried.

Election of Officers

The following were elected:—

President: Mr. R. Hudson.

Vice-Presidents: Messrs. Angler and Scott.

Hon. Treasurer: Mr. H. Thompson.

Hon. Secretary: Mr. W. Tweed.

Auditors: Messrs. Coward and Fletcher.

Council: Messrs. W. Collinson, G. Green, A. Walker, S. E. Sampson, D. D. Canning, G. Tullis and *ex-officio* members.

The Hon. Secretary reported with regard to prices quoted for the dinner-dance to be held in the New Year, and it was decided to accept the terms of the Grand Hotel and that the function be held on a Friday evening if sufficient members and their friends consent to be present.

Interesting Case.—Mr. H. Thompson described a case of intussusception of the ileum into the cæcum in a horse about 12 years old. Purgatives were administered, but there was no passage and the animal appeared very uncomfortable and got worse. There was nothing in the rectum and no flatulency. Death occurred on the fourth day. He thought there was a stone, but *post-mortem* showed intussusception of the small bowel, the ileum having gone into the large bowel, the capacity of the abdomen becoming largely diminished. The contents of the small bowel were quite liquid and there was a little inflammation of the stomach and congestion of the lungs, a small patch being consolidated. The conjunctiva was extremely red.

The President thanked Mr. Thompson for his description of this very rare case.

Mr. Fletcher asked at what time this intussusception took place and wondered whether it occurred at the commencement of the illness.

Captain Johnson asked if the condition would not increase with peristaltic motion of the bowel.

Mr. Thompson replied that he thought the condition started on the Monday and that it would increase until death on the Friday following.

Discussion.—The President then called on Mr. Torrance, Chief Veterinary Officer, Nottingham County Council, to open a discussion on "The Diagnosis of Bovine Tuberculosis as specified in the Tuberculosis Order, 1925."

[Mr. Torrance's paper in opening this discussion and a report of further contributions thereto, are reproduced earlier in this issue.—Ed.]

Mr. Tullis, in moving a vote of thanks to Mr. Torrance, described the meeting as one of the best they had had. The subject so ably introduced by Mr. Torrance, had raised a very interesting and instructive discussion.

Mr. Hudson seconded the vote of thanks, which was passed with acclamation.

A vote of thanks to the President terminated the business.

W. Tweed, *Hon. Secretary.*

* Received for publication, January 12, 1932.

Under the Ministry's Livestock Improvement Scheme there are now 45 premium bulls in service in Shropshire, comprising 17 Dairy Shorthorns, 9 dual-purpose Shorthorns, 2 beef Shorthorns, and 17 Herefords. Six heavy horse-breeding societies are operating in the county, and last year 509 mares were served.

* * * * *

The United Kingdom is now producing grassland products of the value of £375,000,000, said Mr. T. E. Miln, F.L.S., managing director of Gartons, Limited, in a lecture delivered at Chester recently.

REPORT OF A MEETING HELD AT LADY SEAFORTH'S HOUSE ON FRIDAY, JANUARY 29th, 1932, CONCERNING HENRY SPAHLINGER'S FORMULA FOR THE PREVENTION OF TUBERCULOSIS IN MAN AND ANIMALS

The Earl of Crewe said: You have been invited to come here to assist at an historic event. Our purpose is to announce that Henry Spahlinger's formula for the preparation of vaccines has been forwarded to-day to the leading medical and other scientific bodies.

Copies of that formula will be before you, but it has been thought proper that I should make a short explanatory statement on behalf of those who have been responsible for calling this meeting. They are: H.H. The Aga Khan, The Marquess of Crewe, The Earl of Rosebery, The Lady Seaforth and The Hon. Sir Arthur Stanley.

The general nature of Mr. Spahlinger's discoveries has been known to scientists for some years; but when the question of disclosing his detailed formulæ first arose, he was advised by eminent specialists in this country against any such premature publication as might lead to improper exploitation of the remedies. Long and costly processes were involved, and there was the obvious danger that preparations cheaply and hastily manufactured, and probably valueless, might be placed before the public as Spahlinger remedies to the discredit of the method and the disappointment of sufferers. It was, indeed, chiefly because of this risk that Mr. Spahlinger undertook the task of simplifying his processes while preserving the efficacy of the products.

The tragedy has been that during the long years of research work the whole fortune of the Spahlinger family had to be sacrificed. A sum approaching £100,000 was thus spent.

There came a moment when, his funds exhausted, and his work at a critical stage, Mr. Spahlinger was compelled to seek financial help. Funds were advanced on the security of the formula.

These funds were needed for carrying out the work of simplification to which I have referred, and to defray the very heavy cost of testing, over a period of years, the efficacy of the simplified bovine vaccine on cattle. There thus arose the ironical circumstance that when the efficacy of the simplified vaccine had been finally established its formula was no longer under Mr. Spahlinger's control.

The generosity of a small group of public-spirited people, animated by the highest humanitarian motives, made it possible to release the formula. Their names should go down to posterity, as benefactors of the human race. They are: H.H. The Aga Khan, His Grace The Duke of Westminster, The Lady Wolverton, The Lord Wolverton, The Lady Seaforth, The Lord Alington, Lady Mac Robert, Sir James Reynolds, M.P., Sir Philip Reckitt, Mrs. Lionel C. Whiteford, Mrs. Granville Alexander, Mrs. M. de Lisle, Miss Astley Sparke, Mr. Sidney Herbert, Mr. J. Arthur Palethorpe and Mr. Jack Reynolds.

Tuberculosis is the nightmare of the agriculturist. The number of herds free from this disease is very small, and the milk produced by them is sold at a price beyond the means of the poor. The only way to-day in which protection is afforded to the public in regard to this vital article of diet is the way of pasteurisation. This process has, however, the disadvantage of partially devitalising this most valuable of all foods.

Something like 40,000 people die from tuberculosis each year in the British Isles. We are spending vast sums on the merely ameliorative treatment of tuberculosis every day. The importance, therefore, of vaccines which can undoubtedly bring about the elimination of tubercle from meat and milk and which, through the systematic vaccination of human beings, we have reason to believe, can equally bring about the eradication of tuberculous disease from human life, cannot possibly be overestimated.

Spahlinger's method describes two things—a bovine vaccine for the immunisation of cattle, and a completely harmless vaccine for the protection of human beings against this deadly disease.

The value of the Spahlinger bovine vaccine has been established by a series of tests carried out by various committees, extending over a period of 15 years. The successful results of the demonstrations made in this country, under the supervision of Major-General Sir Frederick Maurice, K.C.M.G., were described in the British press in December, 1930. In the course of the tests, vaccinated and unvaccinated (*i.e.*, "control") calves were alike subjected to massive inoculation of living bovine tubercle bacilli. The unvaccinated ("control") calves rapidly succumbed to generalised tuberculosis; whereas the calves, which had been vaccinated, resisted the infection. Some of those vaccinated calves were subsequently slaughtered. Their autopsies provided conclusive evidence of the efficacy of the vaccine. Others, which have been kept alive, are thoroughly healthy to-day—a year and a half after the death of the "controls."

There is one point to which attention should particularly be drawn, because of its far-reaching possibilities. It is that the principles underlying the preparation of the vaccine are fully applicable to diseases other than tuberculosis.

The foregoing considerations are of such vital international importance that the committee felt it would be lacking in sense of duty if it did not take the earliest and most practicable step—through the courtesy and public spirit of the press—to communicate the formula to the world at large.

The Process in Simple Terms

Sir Bruce Bruce-Porter said: Mr. Spahlinger's method sounds so simple that some may ask wherein its greatness lies. My answer is: "It lies in its very simplicity."

The vital points about the Spahlinger process are these:—

This vaccine is the only effective vaccine against tuberculosis containing not a single living microörganism, and so is absolutely free from risk.

Mr. Spahlinger grows the tubercle bacilli, which he requires for the purposes of his vaccine, under environments—of food, heat, etc. —*identical* with those found in the particular body wherein the microbes are creating disease, and where the vaccine is needed for protective purposes. He subsequently places them under such conditions that they die a *natural* death. They thus retain unimpaired the chemical and physical structure by reason of which they are, in fact, effective vaccinating agents.

Hitherto, material from which the anti-tuberculous vaccines have been prepared, has been isolated by what is called "animal passage"—that is, the inoculation of tubercle microörganisms from the carrier-animal into an animal of a different zoological species—from human beings, for example, into guinea-pigs—with subsequent culture on artificial media, completely different from the original environment. *This alters the character of the bacillus.* A vaccine prepared in this manner will be ineffective if asked to deal with the disease in an animal of the group from which the bacillus was originally taken.

Mr. Spahlinger has, to-day, given us a method for the preparation of vaccines which are safe and effective for the precise tasks they will be called upon to perform.

The Spahlinger method is applicable to other diseases than those caused by the tubercle bacillus.

. . . . .

Principles on which the Spahlinger Method of preparing Specific Antigens are Based

The object is to prepare *in vitro* antigens identical to those generated by a given pathogenic microörganism in the living body of human beings or of a given animal species in which this microörganism gives rise to disease. These specific antigens will stimulate the production of antibodies and anti-microörganism defences identical with those which are elaborated in the living body when it is successfully overcoming disease.

In order to prepare such antigens, the appropriate pathogenic microörganisms are isolated from an infected subject, without being passed through another animal species, because this might alter their specificity by adaptation to a different zoological species. These microörganisms are thereafter cultivated under conditions as similar as possible to those present *in vivo*. This is done on specific culture media, which will supply *specific* biochemical material, identical with that provided *in vivo*: thus enabling these microörganisms to retain and reproduce *in vitro* specific protoplasm, metabolism, secretions, aggressive and defensive means, and a specific progeny.

The standard of specificity is set up by the antigenic structure elaborated by a given microörganism when developing under normal spontaneous conditions in a human or animal body wherein this microörganism causes the disease which the antigen is directly (active immunity) or indirectly (passive immunity) intended to prevent or cure.

In addition, no chemical or physical reaction or manipulation may be employed, either during or after the preparation of the antigens, which might alter or denature, even to a slight extent, the antigenic specificity.

. . . . .

Method of Preparation of the Spahlinger Antigens for the Preventive Immunisation of Cattle against Tuberculosis

A piece of tuberculous material is excised in a sterile manner, from a lesion of one of the dead bovine cattle at a slaughterhouse. Tuberculous microörganisms taken from this material are then inoculated, under sterile conditions, on *specific* media which will supply the microörganisms with specific *bovine* biochemical material.

The specific culture medium is prepared as follows:—

A bovine body fluid (defibrinated blood, serum, organ or tissue extract, etc.) is distributed in test tubes, made of Jena glass. These test tubes are thereafter placed, in a sloping position, in an incubator and the liquid is coagulated at about 65° C. When the tubes and their contents have become cold, there is spread on the coagulated surface of this solid medium a small quantity of normal (non-heated) bovine body fluid (defibrinated blood, serum, organ or tissue extract, etc.); the tubes are then placed in the same inclined position as they were in the incubator, so that the normal bovine fluid well covers the whole surface of the coagulated medium. The tubes are left 48 hours in this position, so that the normal bovine fluid can well impregnate the superficial layers of the coagulated medium.

These specific media, inoculated with native bovine tubercle microörganisms (*i.e.*, unaltered by passages on artificial media or by passages through an animal species zoologically heterogeneous to bovine cattle), are placed in an incubator where they are kept in the dark at a temperature of 38·5° to 39° C.

As soon as the culture has sufficiently grown, it is reinoculated on specific normal (unheated) bovine media, preferably liquid, consisting of normal defibrinated blood, serum, organ or tissue

extract, etc., of bovine cattle, contained in Jena glass flasks. These cultures are then placed in a dark incubator and kept at a temperature of 38·5° to 39° C. When the cultures have sufficiently developed, the tubercle microörganisms are collected, and made into an emulsion in a sterile manner, in the absence of oxygen, with distilled water or normal saline solution.

The emulsion is thereafter distributed into ampoules, put away and kept in a cool completely dark place until all the tubercle microörganisms in the emulsion have died a *natural* death by the efflux of time. According to the nature of the emulsion (its concentration, state of division of the tubercle microörganisms, etc.), it is necessary to keep the vaccine a considerable time—a year or even longer—before it can be used. It is then a harmless—though effective—material for preventive immunisation.

The antigens thus prepared *in vitro* are identical with those elaborated by the tuberculous microörganisms *in vivo* in diseased bovine cattle, save that the former antigens, when ready for use, will *not* be part of a *living* microorganism.

Each batch of vaccine must be tested so as to be quite certain that the microörganisms are indeed dead.

Traces of antiseptics, formaldehyde for instance, may be added to the emulsion before sealing it in the ampoules, but every precaution must be taken to safeguard the strictest specificity of the antigenic elements. The vaccines thus prepared retain for years their specific antigenic and vaccinating properties.

It is essential that, from the moment of the isolation of the tubercle microörganisms and during all the subsequent processes, no reaction or manipulation should take place which might alter, even in a slight degree, chemically, physically or physiologically, the bacterial metabolism and the antigenic structure of the unmodified bovine tubercle microörganisms.

The vaccine embodies different bovine strains of tuberculosis.

With vaccines prepared by the method described above, bovine animals have been most successfully vaccinated in an extensive series of tests. Calves immunised with the bovine vaccine were subsequently injected with large doses of living bovine tubercle bacilli, which they entirely resisted; while unvaccinated calves, used as controls, rapidly succumbed, their autopsies revealing miliary tuberculosis.

. . . . . .

Method of Preparation of the Spahlinger Antigens for the Preventive Vaccination of Human Beings against Tuberculosis

The vaccine for human beings for antituberculous purposes comprises three different types of vaccine.

(1) A *bovine* vaccine (made from *bovine* tubercle microörganisms grown on specific *bovine* media) prepared as previously described. (2) A vaccine made from *bovine* tubercle microörganisms grown on specific *human* media. Bovine tubercle microörganisms are isolated from tuberculous lesions of dead cattle and grown on a solid medium in the manner previously described. They are, thereafter, inoculated on specific human media, preferably liquid, for instance normal (unheated) defibrinated blood, serum, ascitic or pleural fluids, etc., and grown in a dark incubator at a temperature of 37·5°. When the cultures have sufficiently grown, the tubercle micro-organisms are collected and made into an emulsion, in a sterile manner, as said above.

(3) A vaccine made from *human* tubercle microörganisms grown on specific human media. Tubercle microörganisms of the human type are isolated directly from tuberculous lesions of human beings, inoculated on human media made with defibrinated blood, serum, ascitic, or pleural fluids, etc., prepared in the same way as the specific bovine solid media previously described, and thereafter grown in a dark incubator at 37·5°. If agar is added to ascitic fluid, high temperatures must be avoided. Thereafter a normal (unheated) human body fluid is spread on the surface of the solid medium, so that it can well impregnate the superficial layers thereof.

The human tuberculous microörganisms should be isolated from a human lesion, without animal (such as guinea-pig) passage, so as to avoid adaptation to an animal species which is "foreign" in the zoological sense to the human species, and cultivated directly on a *specific* human culture medium.

When the culture has sufficiently developed on this medium, the microörganisms are reinoculated on normal (unheated) specific human media, preferably liquid, etc. As soon as these cultures have attained their full development, the tubercle microörganisms are collected and emulsified, in a sterile manner, as described above. This emulsion must, of course, embody the different strains of the human type of tuberculosis.

Distilled water, peptone, glucose, glycerine and other substances, which do not affect the specific properties of the tuberculous antigens, can be added in small quantities to the culture media.

The human and bovine culture media employed must originate from *tuberculous-free* bodies.

It is advisable that the human body fluids be filtered before being made up into the culture media, and the tubercle microörganisms, grown on these media, should be washed several times in a normal saline solution before being emulsified. This is in order to remove all traces of the culture medium. In addition, formaldehyde may be added to the vaccine for human beings.

The final human vaccine is a mixture of the three types of vaccines above described. The

relative proportions of these three vary according to the nature of the particular type of the tuberculous disease.

Of course, human beings cannot be used as controls, or subjected to deliberate massive experimental infection (such as can be applied to cattle) to demonstrate the value of the human vaccine. Therefore conclusive evidence of the degree and duration of the human immunity can only be based on statistics covering a very large number of cases and collected over a period of years during which those vaccinated have been subjected to careful observation.

Potentialities of the Method

According to the type of immunisation and the species of microörganisms from which the antigens are derived, the material used should be:—

(*a*) The bacterial bodies (whole endotoxins);

(*b*) An extract of the bacterial bodies (partial endotoxins);

(*c*) The specific liquid on or in which the microörganisms have grown; this liquid containing the soluble antigenic substances (exotoxins)—products of the bacterial metabolism and of the aggressive and defensive means elaborated by the pathogenic microorganisms;

(*d*) A mixture of (*a*) and (*c*), or (*b*) and (*c*).

There is experimental evidence indicating that this method can be successfully used against various diseases, in human beings and animals, not only for preventive and therapeutic vaccination, but also for the preparation of antitoxic and antibacterial sera, for test purposes, antigen-antibody reactions, etc.

H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

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AGRICULTURE AND FISHERIES, MINISTRY OF:—		
39.—Fertility and Animal-Breeding. January, 1932. (Formerly Research-Monograph No. 2.) (24-122-39-0)	1 6	1 8
TREASURY:—		
Economic Advisory Council:— Education and Supply of Biologists. Report of the Committee on. May 20th, 1931. (63-75-0-0)	1 0	1 1

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Prisoners at Cardiff goal have complained to the governor about receiving horticultural lectures "as they were not included in the sentence."

Notes and News

DIARY OF EVENTS

Feb. 8th.—N.V.M.A. Editorial Committee Meeting at 2, Verulam Buildings, Gray's Inn, W.C.1.

Feb. 10th.—Meeting of the Scottish Metropolitan Division, N.V.M.A., at Edinburgh.

Feb. 11th.—Meeting of the Ladies' Veterinary Benevolent Guild, 10, Red Lion Square, W.C.1, 3 p.m.

Feb. 11th.—Annual Meeting of the Lincolnshire and District Division, at Grantham.

Feb. 19th.—Annual Dance of the Royal Veterinary College, at the Hotel Russell.

Feb. 19th.—Annual Meeting of the Eastern Counties Division, N.V.M.A., at Ipswich.

Feb. 26th.—Meeting and Annual Dinner of the Midland Counties Division, N.V.M.A., at Birmingham.

April 1st.—R.C.V.S. Annual Fees due 1932-33.

April 6th.—R.C.V.S. Registration Committee.

April 7th.—R.C.V.S. Examination, Registration and Parliamentary Committees.

April 8th.—R.C.V.S. Library and Finance Committees; Council Meetings.

May 5th.—R.C.V.S. Last day for Nominations for election to Council.

May 12th.—D.V.S.M. Examination entries due.

May 19th.—R.C.V.S. Council Election Voting Papers issued.

May 26th.—R.C.V.S. Last day for receipt of Voting Papers.

June 2nd.—R.C.V.S. Annual General Meeting. V.V.B. Fund Annual General Meeting.

June 9th.—D.V.S.M. Written Examination begins.

June 13th.—D.V.S.M. Oral Examination begins.

June 29th.—R.C.V.S. Committee Meetings begin.

June 30th.—R.C.V.S. Annual Dinner.

July 1st.—R.C.V.S. Council Meetings.

July 6th.—R.C.V.S. Summer Examinations begin.

Aug. 8th-13th.—N.V.M.A. Jubilee Congress at Folkestone.

BRIGADIER GEORGE FLEMING

Our readers will be interested to learn that Brigadier George Fleming, D.S.O., who is in command of the British Forces in Shanghai, is the son of the renowned member of our profession of that name. When Dr. George Fleming retired from the position of Director-General of the Army Veterinary Department, in 1890, he went to reside at Coombe Martin, North Devon, which remains the home of Brigadier Fleming, and where his father died in 1901.

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R.C.V.S. COUNCIL ELECTION: ADDITIONAL NOMINATION

In addition to the names published in our last issue, another nomination for election to the Council of the R.C.V.S. has been received, namely:—

Mr. R. E. Glover, Cambridge. Proposers: Sir J. M'Fadyean, Professor J. B. Buxton.

Will overseas members please note this addition.

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FOOT-AND-MOUTH DISEASE

When the House of Commons reassembled on Tuesday last, Mr. Hurd asked the Minister of Agriculture if he would give the latest information obtainable as to the area and extent of foot-and-mouth disease in Holland and adjacent countries from which foodstuffs come to this country.

Sir J. Gilmour: According to the Ministry's information, the numbers of outbreaks of foot-and-mouth disease in Holland, Belgium, France, and Germany in November and December of last year were as follows:—

	November	December
Holland	679	251
Belgium	22	23
France	1,084	865
Germany	4,134	4,350

The incidence of the disease would appear to be general in these countries.

Mr. Hurd: Is not the right hon. gentleman alarmed by these figures?

Sir J. Gilmour: They are very serious.

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PERSONAL

Birth.—Hare: On January 29th, at 70, Holywell Hill, St. Albans, to Joyce, wife of Professor Tom Hare, a daughter.

. . . . .

Will.—Brown, Mr. William, of Pembury Road, Tottenham, N., for many years in practice as a veterinary surgeon at Wiveliscombe, Somerset (net personalty, £254), £1,617.

. . . . .

Presentation.—The *Fraserburgh Herald* records that in Fordyce Street Hall, Roschearty, a large company recently assembled under the auspices of the Aberdour and North-East Agricultural Association to honour Mr. David Crabb, veterinary surgeon, and present him with a piece of silver plate, suitably inscribed, and a purse of money.

Mr. Crabb, who was born near Carnoustie almost 80 years ago, has practised for over half a century in the Buchan district, where he is highly esteemed. Although he has lived a strenuous life, he is still fit for a full day's work.

Mr. M. J. Keith, president of the Association, in making the presentation, observed that Mr. Crabb had given them 52 years of very devoted and faithful service. In thanking him, they hoped that he would flourish in the future as he had in the past, and that to him and his good lady, Mrs. Crabb, the gift would prove as useful as he had been to them.

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TERRITORIAL ARTILLERY MECHANISATION

All Territorial Army brigades of Royal Artillery will be completely mechanised during the present year instead of by 1933 as originally planned. This change of plan is announced in a War Office order just issued to all Territorial Army Associations, and it has been made possible owing to a large number of vehicles becoming available on the reorganisation of the Regular Army.

"It is desirable on the grounds of economy and efficiency that the programme of mechanisation for the Territorial Army should be completed as early as possible," states the Order. "Further, this opportunity of completing the scheme cannot be allowed to pass, since the resumption in 1933 of annual training involves an addition to the Army Estimates of approximately £1,000,000, and this might make it impossible to incur in the same year the capital expenditure required for the purchase of six-wheelers."

The mechanisation of the Territorial Army began in 1931, and was intended to be spread over a period of three years, ending in 1933. The War Office recently issued orders for the mechanisation of the Divisional R.A.S.C., and the Field Ambulances of the Territorial Army.

CIVIL SERVICE BONUS

The Civil Service Correspondent of *The Times*, in a communication published in that paper on Monday last, states: "In connection with the negotiations with the Treasury which are shortly to begin with reference to the future of the bonus system, the policy of the staff side of the National Whitley Council is revealed in a statement concerning the standards of remuneration of civil servants which has just been issued to Members of Parliament. The staff side state that the defects of the existing bonus system 'have been the subject of grave dissatisfaction in the Civil Service for many years past,' and although the staff side would not be so unreasonable as to pursue its full claims at the present time, it is imperative that certain minimum requirements should be conceded, namely:—

(1) There should be a point in Civil Service remuneration below which the pay of no adult employee should be reduced.

(2) The zone of full compensation for the increase in the cost of living over 1914 should be extended considerably over the present limit of 35s. a week.

(3) The bonus should be adjusted more frequently than every six months so as to provide against the possibility of sharp rises in prices.

"The staff side go on to state that if a settlement is to be reached 'it will be necessary for the Government to face up to the facts of the gross underpayment which now exists in the State service and of the lowering of the standards of living of all grades which has been going on for some years past, and to be prepared to rectify the position even if this involves considerable expenditure. Members of Parliament can best help by making it plain to the Chancellor and the Government that they do not desire, nor approve of, a continuance of the present underpayment, but will be willing in their Parliamentary capacity to meet the bill entailed by its removal.'"

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HORSE OWNERS' REFERENCE BOOK

The Horse Owners' Reference Book, 1932, which has just been published by the National Horse Association of Great Britain, in response to many inquiries received from horse owners and breeders for general information, contains many useful facts and statistics. Particulars are given of all fixtures in which horses and ponies will take part this year, together with details of horse-breeding societies and trade and other organisations interested in the horse.

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INJURY FROM DOG LEFT IN CAR

The House of Lords—Lord Dunedin, Lord Warrington of Clyffe, Lord Atkin, Lord Macmillan and Thankerton—after a recent hearing, dismissed the plaintiff's appeal from the decision of the Court of Appeal allowing the defendant's appeal from verdict and judgment in an action tried before Mr. Justice Talbot and a common jury in which the jury awarded £2,000 damages against the defendant, whose Airedale dog, left unattended in a parked motor-car, broke the glass panel at the rear of the vehicle, a splinter from the glass entering the plaintiff's eye, which subsequently had to be removed. The defendant denied that he was negligent in leaving the dog in the car. (Fardon *v.* Harcourt-Rivington.)

Lord Dunedin, in delivering judgment, said that mention was made of the well-known case of Rylands *v.* Fletcher (L.R., 3 H.L., 330), though no great stress was laid on it, and he had no doubt that that case had no bearing on the present facts. That case decided that a person who owned a dangerous thing kept it at his peril, and if it escaped he was responsible for the consequences, whether he was negligent or not. But a motor-car with a dog in it was not a thing which was dangerous in itself. Therefore, it came to this—and this was the point mainly relied on by Mr. O'Connor (for the appellant)—that if a man negligently left something in a place to which the public had access which might become dangerous without taking any precaution against the thing becoming dangerous, he was liable for the consequences. The root of that liability was negligence, and what was negligence depended on the facts of the particular case.

If a man might reasonably have anticipated that the thing might become dangerous he was liable for not taking precautions. But if there was a mere possibility which could not have been foreseen he was not liable. Now the danger which they had to deal with in this case was the danger of a piece of glass being knocked by a dog out of a small window at the back of the car and of a splinter of the glass hitting a passer-by on the pavement. Given that the dog was barking and jumping about, would any man expect such a thing to happen? That was such an unlooked-for event that he did not think that any reasonable man could say that a person ought to be convicted of negligence for not taking any precautions against it. A person must guard against a reasonable probability of danger; he was not bound to guard against a fantastic possibility. This was an accident which had never before happened, and in the circumstances of this particular case there was nothing amounting to negligence. The appeal would be dismissed.

The other noble and learned Lords agreed.

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VETERINARY INSPECTION IN EAST SUSSEX

East Sussex Agricultural Committee, at a recent meeting, received a Report of a Conference appointed to consider the question of the desirability of appointing a whole-time Veterinary Inspector or of whole-time Veterinary Inspectors to carry out the duties of the County Council under the Diseases of Animals Acts and Orders, and the Milk and Dairies Orders.

The Report came up in the Report of the Diseases of Animals Acts Sub-Committee, and is to be passed on to the County Council.

The Conference Report stated that at the present time the County Council's duties under the Acts and Orders referred to were carried out by part-time Veterinary Inspectors, the cost to the County Council being approximately £1,657 per annum. Of that sum £200 was paid by the Public Health and Housing Committee in fees to the Veterinary Inspectors, and the sum of £1,457 per annum was paid, in similar fees, by the Diseases of Animals Acts Sub-Committee. This method of carrying out the work was not, in the opinion of the Conference, satisfactory.

While there was no doubt that the existing arrangements were carried out as economically as possible, it was found that in practice there was a lack of uniformity between the Inspectors of different markets, and there were other reasons which made it desirable that different arrangements should be made. The Conference had considered two schemes, and the one they recommended was for the appointment of two whole-time Veterinary Inspectors, one at a salary of

£500 per annum, plus £175 per annum for travelling expenses, and one junior whole-time Veterinary Inspector at a salary of £400 per annum plus £150 per annum for travelling expenses. In addition to those salaries, the sum of £50 per annum should be allowed for miscellaneous expenditure, but the total expenditure should not, subject to what was said as to superannuation, exceed £1,275 per annum.

The reasons given by the Conference for recommending this scheme were that the Inspectors would be whole-time officers of the Council, and, therefore, their duties would not be made difficult by the fact that they might be called in to inspect the herds of, and possibly give an adverse report against, a farmer who might be a private client; there would be uniformity as regards the standards expected on animals, the methods of inspection of animals and markets, and the use of the tuberculin tests; and that, although it would be impossible for such a staff to undertake frequent routine inspections of dairy herds, the moral effect of occasional inspections would, in a number of cases, be highly beneficial. Should the posts be designated for the purposes of superannuation, an additional cost of £45 per annum would be involved. It would be seen, therefore, that the scheme would not only result in greater efficiency, but also in an actual saving to the County.

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THE SEX-LINKED METHOD IN POULTRY BREEDING

Some years ago, a few scientific workers were busy at Cambridge investigating the nature of heredity by means of breeding experiments. Among the discoveries made by them was one that seems destined to play a considerable part in the development of the poultry industry. This was the discovery that the hen transmits certain characters to her sons which she does not transmit to her daughters. By taking advantage of this peculiarity the breeder now has it in his power so to arrange his matings that he can distinguish, *with absolute certainty*, between the sexes of his chicks as they hatch.

It is, however, only from certain types of mating that this distinctive result can be obtained. Most of the characters of domestic poultry that have hitherto been investigated follow the ordinary rules of what has been termed Mendelian heredity; either parent transmits equally to either sex of the offspring. Characters transmitted by the hen solely to her male offspring are fewer in number, and even then only four of these are likely to be of commercial value. These four characters are (1) silver ground colour of plumage and down as opposed to gold, (2) barred plumage (such as found in Plymouth Rocks) as opposed to unbarred plumage, (3) certain forms of light-shank colour as opposed to dark-shank colour, and (4) slow feathering as opposed to rapid feathering.

In the Ministry of Agriculture's new Bulletin, No. 38, the scientific and practical sides of the transmission of these characters are fully discussed, and it should be pointed out that the information thus made available will be of service from the utility point of view. In the first place, the great advantage of sexing chicks with certainty at hatching will be sufficiently obvious, for the sexes can be separated in the incubators and each treated according to its special requirements. Further, the breeder of first-cross laying pullets now has it in his power to get rid of his surplus cockerels as soon as they hatch, without having to rear them through the expensive early stages. The back-yarder, too, who rears a few chicks for the sake of the eggs they will produce later, can now purchase a batch of first-cross day-old chicks with the certainty that they are all pullets. Again, the breeder of table poultry need rear nothing but the heavier cockerel if he finds it pays him better to do so. Bulletin No. 38, which is illustrated with coloured plates, may be obtained from H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2, price 9d. net.

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MOTORISTS AND DOGS AND CATS

Dr. Edwin Smith, the West London Coroner, pointed out at a recent inquest that it was not generally known that a motorist must treat a dog in the same way as a human being if he ran over one. A motorist was required by law, he believed, to stop after running over a dog, but he need not do so if it was a cat. A police officer present having confirmed this, Dr. Smith added, "I do not suppose cats are aware of the apparent disparagement contained in the law, so they don't worry."

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SOVIET "NURSERY OF FUR-BEARING CREATURES"

The Commissariat of Agriculture of the Union of Soviet Socialist Republics has published an announcement that the Soviet Government has begun organising "the greatest nursery of fur-bearing creatures in Europe," and that furs are to become a more important article in Soviet export trade. Rabbits and kangaroos are to receive special attention.

"The prospects of the fur trade have improved in consequence of the experiments of Professor Ilyin, who is reported to have discovered a way to breed rabbits of any colour desired and bearing fur of a very high quality," says the Riga Correspondent of *The Times*. "Professor Ilyin first made his announcement on September 30th, 1931. He explained that he worked with the help of heavy mineral salts in changing temperatures and that, given a white or black rabbit, he could make it quickly shed its fur and grow a beautiful new natural coat of a different colour, the shade of which he regulated by varying his combinations of temperatures and salts. He added that other animals also responded to his treatment, and he was already engaged at the Moscow Institute in experiments on bigger fur-bearing animals, as his system opened up 'brilliant prospects for increasing the export value of our pelts.'

"The new nursery is called a State Farm and occupies some 2,000 acres, near Maïkop, between the Caucasus and the Crimea. Its stock is not to be confined to rabbits, but experiments are to be made also with breeding kangaroos and other exotic 'fur-bearing beasts,' which it is hoped may find congenial homes and establish their race in Soviet Russia. For a beginning '100 kangaroo couples' have been secured and placed among the indigenous fur-bearing fauna on the Maikop State Farm.'"

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Mr. J. Barker, M.R.C.V.S., Nelson, Lancashire, has been describing the ideal dairy cow to a gathering of Rochdale farmers. His ideal is "a neat Shorthorn with an Ayrshire bag."

NORTH SHIELDS ANIMAL WELFARE CLINIC

The *Shields Daily News* reports the opening on January 27th, of the Tynemouth Animal Welfare Society's clinic at 10, Beacon Street, North Shields. The event is described as one of great importance to poor people, whose animals will be treated free. Miss Eva J. Robinson, president of the Society, performed the opening ceremony, handing over the keys to the honorary veterinary surgeon, Mr. N. Irvin, M.R.C.V.S. Mr. H. A. Straker, vice-chairman, presided over a large attendance. The dispensary will be open from seven till nine every Thursday evening.

As our readers will be aware, a professionally-staffed centre is also in successful operation at Newcastle, so that Tyneside is contributing very materially to the Veterinary Profession's effort to provide treatment for the sick animals of poor persons.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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GRUNTING IN HORSES

To the Editor of the Veterinary Record

Sir,—*Re* Mr. Hynes' article on "Grunting in Horses," in which he mentions that a colleague was heavily mulcted for damages in a case in which he "forgot to grunt" the horse—as I was the veterinary surgeon employed by the plaintiff it may interest your readers to hear my views. As far as I can recollect, the defendant wrote to my client, on being asked for an explanation as to why he passed a grunter, to the effect that he "forgot" to grunt the animal, thereby admitting negligence on his own part, and in my opinion, this was the point which weighed most with the judge, in making his decision.

I am of the opinion that a grunter is an unsound horse, even though he may be "sound of his wind," as a grunter has not complete control of his nervous system and my opinion is borne out by the above horse, which has now developed into a "whistler."

Yours faithfully,
George Hobson.

Beresford Street,
Waterford.
January 30th, 1932.

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THE GREATNESS OF ESTATE

To the Editor of the Veterinary Record

Sir,—"Themistocles, the Athenian, when desired at a banquet to touch a lute, replied that he could not fiddle, but yet he could make a small town a great city."

Thus your editorial article. A nice sociable gentleman this Themistocles must have been! After the banquet he probably went home alone, while the rest foregathered elsewhere with music and song.

There is a story of this Athenian, perhaps hitherto untranslated, which is not without interest. Some time after the occasion to which you refer, Themistocles himself gave a banquet, but not many people came, partly because there would be no music, and, as some said, partly because Themistocles lacked humanism.

Now, Themistocles had done rather well in business, and it annoyed him to think that his banquet had been a "frost." So, having great influence, he took steps, by cornering the choicest viands and exercising the rights of his controlling interest in the chief banqueting halls, which made it difficult for others to give banquets.

After a while he invited some 3,000 guests, but only 1,600 came, and some of those unwillingly. Of the rest, many just tightened their belts, and a few paid through the nose to feed elsewhere, rather than dine freely with one who liked not the lute and who used devious methods to force them to his feast.

. . . . .

"In 1921 it took over the *Veterinary Record* . . . . and the membership of the Association rose from 372 to 1,115."

Just so. The *Record* (Hunting's Weekly Journal for the Profession) acquired and held to ransom; on this compulsion—join the Association or pay treble for the *Record*—was the new Association founded. One might apostrophise such compulsion in the words of the poet (Bishop Heber, was it? Or wasn't it?):—

"Kingdoms by thee to lavish greatness grown
Boast of a foreign vigour, not their own.
At every draught more large and large they grow
A bloated mass of rank unwieldy woe."

What is the Greatness of Estate? Themistocles made a small town a great city. What for? Not, apparently, to make men happier.

Despise not the lute. What of the story of Orpheus? Mythical? Perhaps—but truer in spirit and more worthy of application than that of Themistocles. Let us cast out the high-gravel-blind Athenian and hark back to the grain of mustard-seed. If the germ has not withered there may be hope.

Yours faithfully,
Esmond Brown.

Edinburgh.
January 30th, 1932.

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"THE ANONYMOUS REVIEWER"

To the Editor of the Veterinary Record

Sir,—I desire to support the protest of Mr. D. E. Wilkinson against the publication of unsigned reviews in the *Veterinary Record*.

A typical example of such a "review" appears in this week's issue of your journal. Some time ago this firm issued in pamphlet form the results of the practical application of certain well-known facts regarding pig feeding for bacon production, etc. This pamphlet was intended for farmers and breeders who are particularly interested in such matters. The publication in question has now found its way into the columns of the *Record, via* your "anonymous reviewer," who dismisses it as worthless from a scientific point of view.

I am asked to point out that the pamphlet merely deals with the practical application of well known facts; it does not purport to state anything new, as is explained on page 3, whilst the reason for lack of controls is given on page 4. Had your reviewer taken the trouble to read the pamphlet carefully he would not have reviewed it as though it were a scientific treatise.

Yours faithfully,
D. J. Anthony.

Veterinary Department,
Messrs. Marsh and Baxter, Ltd.,
Brierley Hill, Staffs.
January 30th, 1932.